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NEW YORK:
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NATURAL HISTORY

OF

MAN, THE GLOBE,

AND OF

QUADRUPEDS,

WITH ADDITIONS FROM CUVIER, LACEPEDE, AND
OTHER EMINENT NATURALISTS.

VOL I.

ILLUSTRATED WITH 150 ENGRAVINGS.

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NEW YORK:
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No. 379 BROADWAY.
1857.

The Editor trusts that the result of his labors will, in some degree, contribute to diffuse, and chiefly among the rising generation, a spirit of inquiry into the numerous and striking objects which are included within the domain of NATURAL HISTORY.

J. W.

NATURAL HISTORY

PART I.

CHAPTER I.

Of Attraction—Repulsion—Elements—Heat—Air—Water—Earth—Metals and Mines—the Form, Composition, &c. of the Earth—Fossil Remains.

THE known powers of nature may be reduced to two primitive forces, *attraction* and *repulsion*. The first is the cause of gravity; in other words, it is by the attraction which exists between the mass of earth, and all bodies near its surface, that every thing has a natural tendency downward, that all matters fall to the ground, &c. The second principle is the cause of elasticity, and, by counteracting the effects of attraction, prevents the matter of the universe from becoming a solid mass.

The most ancient authors have agreed in supposing, and mankind in general still imagine, that there are only four distinct species of elementary or original matter, *viz.* fire, air, water, and earth. Modern science has, however, discovered that none of these are entitled to be considered as elements or primary substances; while, on the other hand, it has increased the number of elementary principles to fifty-two. But as the popular arrangement is sufficient for our present purpose we will not depart from it.

There is reason to believe that FIRE, HEAT, or CALORIC, is the only permanently elastic substance in nature. We see that when it penetrates the pores of any body, it uniformly expands it. A bar of iron is lengthened by being heated, metals and other substances are melted by it, and water is converted into vapour. There is therefore ample ground for believing that all fluidity is the effect of heat. The natural state of water is ice; and air itself, were there any means of producing a sufficient degree of cold, might probably be reduced to a solid mass.

As all fluidity has heat for its cause, we find, by comparing certain substances together, that much more heat is requisite to keep iron in fusion than gold, much more to keep gold in that state than tin, much less to keep wax, much less to keep water, much less for spirit of wine, and at last exceedingly less for mercury, (quicksilver,) since it only becomes solid at 187 degrees below that point at which water freezes; this matter, mercury, would be therefore the most fluid of all bodies, if air were not still more so. Now, what does this fluidity, greater in air than in any other matter, indicate? It appears to indicate the least degree of adherence that can be conceived between its constituting parts, by supposing them of such a figure as only to touch each other at one point. The greater or less degree of fluidity does not, however, indicate that the parts of the fluid are more or less weighty, but only that their adherence is so much the less, their union so much the less intimate, and their separation so much the easier. If a thousand degrees of heat are required to keep water fluid, it, perhaps, will only require one to preserve the fluidity of air.

It is doubtful whether LIGHT consists of the same matter with elementary fire or not. The great source of light is found to be the sun, from whose body it is projected in the space of nearly eight minutes; and as the sun is computed to be distant ninety-five millions of miles, the light must of consequence travel at the rate of about two hundred thousand miles in one second of time.

Light may be reflected as well as projected. The light which we receive from the moon is only reflected as from a mirror. The light of the sun is three hundred thousand times stronger than the light of the moon. Whether the solar rays themselves convey heat, or act by evolving the caloric of bodies, is a point which is yet undecided.

The air we breathe is a compound of two gases, oxygen and nitrogen, in the proportion of twenty-one of the former to seventy-nine of the latter. It also contains vapour, and small quantities of carbonic and other gases. For a considerable period, oxygen was supposed to be the only supporter of combustion; but it is now known that it is not the sole supporter.

if the air be exhausted out of a tube, one end of which is immersed in water, the weight of the atmosphere pressing upon the surface of the water will force the water up the empty tube to the height of about thirty-four feet; and if the tube be immersed in quicksilver it will force the quicksilver up to the height of twenty-nine inches and a half. A column of air, therefore, of the height of the atmosphere. which is about forty-five miles, is equal in weight to thirty-four feet of water, and about thirty inches of quicksilver.* From these experiments it is computed that a man usually sustains a weight of air of about thirty-two thousand four hundred pounds: a weight sufficient to crush him to atoms, were it not balanced by the outward pressure of the air enclosed in his frame.

Like all other matters, air is expanded by an increase of caloric, or the matter of fire or heat, introduced between its particles. It is therefore said to be rarefied by being heated. The greatest degree of cold that ever has been known, is not sufficient to destroy the spring of air. Air has, however been reduced to the state of a liquid, by a degree of pressure equal to one thousand two hundred atmospheres. As the particles of air are subject to the laws of gravitation, air is likewise expanded or rarefied by a decrease of its mass or quantity; for instance, if a quantity of the superior air be removed, the pressure on that below is proportionably decreased, and from its inherent elasticity, it is rarefied, or the particles removed to a greater distance from each other. Thus also the receiver of an airpump, after a considerable quantity of the air is pumped out, still continues in reality full of air, though that air is of a thinner consistency.

Air not only contributes to combustion, but also to animal and vital heat. Animals which have lungs, and which, consequently, respire air, have always more heat than those which are deprived of it; and the more the internal surface of the lungs is extended and ramified in a greater number of cells, the more, in one word, it presents a greater surface to the air which the animal draws in by inspiration, the more also its blood is heated, and the more it communicates heat to all the parts of the body it nourishes; and this proportion takes place in all known animals. Birds, relatively to the volume of their body, have lungs considerably more extended than man or quadrupeds. Reptiles, even those which have a voice, as frogs, have instead of lungs a simple bladder. Insects which have little or no blood, pump the air only by some pipes, and these have little animal heat. Thus, taking the degree of the temperature of the earth for the term of comparison, "I have observed," says Buffon, "that this heat being supposed ten degrees, that of birds is nearly thirty-three, that of some quadrupeds more than thirty-one and a half, that of a man thirty and a half, or thirty-one; whereas, that of frogs is only fifteen or sixteen, that of fishes and insects eleven or twelve; that is, the least of all, and very nearly the same as that of vegetables. Thus the degree of heat in man and animals depends on the force and extent of the lungs: these are the bellows of the animal machine; they support and augment the fire according as they are more or less powerful, and their motion more or less ready."

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* On this principle the barometer is constructed, in order to show the variations in the weight of the air. When it is light the quicksilver in the glass is less pressed by the atmosphere, and when the air is dense and heavy the quicksilver rises. Barometers are also used to determine the height of mountains, &c. because the higher we ascend in the atmosphere the less is the weight which presses on the quicksilver.

Vegetables and most insects have, in the room of lungs, only aspiratory tubes or pipes, a kind of tracheas or windpipes, by which they pump up the air which is necessary for them; it is seen to pass in very sensible balls into the pith of the vine; it is not only pumped up by the roots, but often even by the leaves; it forms a part, and a very essential part, of the food of the vegetable, which assimilates, fixes, and preserves it.

Water is a compound, formed of two gases, oxygen and hydrogen, in the proportion of eighty-nine parts of oxygen and eleven parts of hydrogen. It has already been intimated, that heat is the efficient cause of all fluidity, and that ice therefore may be termed the natural state of *water*: by adding to the quantity of heat, water is rendered elastic and volatile; that is, it is converted into an invisible vapour called steam, which is again condensed into water, when the superfluous heat is withdrawn. The force of vapour is almost incredible. Under certain circumstances, it may exceed thirty times that of gunpowder. An insignificant portion of water converted into steam will raise enormous weights, and if not properly regulated, will burst the most solid metallic vessels. The wonderful power and boundless utility of this agent are strikingly exemplified in the steam engine.

One property of water it is necessary to notice, and that is, that it will always rise to the level of its source, when conveyed in pipes, or other close channels. This property is owing to the pressure of the atmosphere, which pressing equally on all parts, will force the fluid from the source, through whatever channels it is to pass, till it meets with an equal resistance from the pressure of the atmosphere at the other end. This is the principle on which fountains and jets-d'eau are constructed. The water which is spouted out by the fountain is always conveyed in a pipe from some source which lies higher than the mouth of the fountain.

When the pressure of the atmosphere is removed from the mouth of a pipe or tube, water will rise in it to the height of thirty-three feet above the height of its source. This is owing to the pressure of the atmosphere upon the source of the water; and on this principle the common pumps are constructed, a vacuum being created by the raising of the piston of the pump.

All bodies lighter than water swim in that element; bodies which are heavier are capable of displacing a bulk of water equal to their own, and consequently sink. Ice (which is water in a solid state) floats upon water, from its being porous. For the same reason water, in freezing, bursts the closed vessels in which it is contained: as it is more porous than water, it necessarily takes up more room. So strong is the expansive power of water in freezing, that a single cubic inch expands with a force equal to thirteen tons. Cannon, of an inch thick, and bomb shells, of an inch and three quarters, have been split by this means. The dilatation of water, in passing to the state of ice, affords a beautiful instance of the wisdom of Providence. Had water, like every other substance, been contracted while cooling, the first coat of ice would have sunk to the bottom, another would have been formed and precipitated in the same manner, and thus the process of freezing and sinking would have continued till the whole of the aqueous fluid on the globe was rendered a solid mass.

Water constitutes, if not the principal, at least, a considerable part of the food of vegetables. It is the medium by which a certain class of animals, on this account termed aquatic, respire; its utility to man, as well as in diluting his food. as in increasing his enjoyments in various modes, it would be tedious and useless to describe minutely. A quantity of air is generally contained in water.*

Though the arrangement will not be a strictly scientific one, the other matters of which this universe, at least that part of it which is visible to us, is composed, may be reduced to three classes. 1st. Those which are purely combustible, such as all animal and vegetable matters: 2dly. Those which may be reduced to a calx or cinder, such as most of the metals: 3dly. Those on which fire appears to have no effect, and produces no alteration of weight, such as the precious metals, gold for instance.

Another division was at one time adopted by chemists, who divided all uninflammable matters into the vitrifiable, or that which is convertible into glass; and the calcareous, or that which is convertible into lime.

Thus crystals, precious stones, free stone, granites, porphyries, agates, gypsums, lava, pumice stone, with all metals and other minerals, are vitrifiable either by the fire of our furnaces, or that of burning mirrors; whereas marble, alabaster, chalk, marl, and other substances which proceed from the waste shells and madrepores, cannot be brought into fusion by these means. Many substances, however, which were formerly considered as infusible, have recently been reduced by the agency of the galvanic fluid, or by the oxy-hydrogen blowpipe.

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* As water is frequently mixed with foreign matter, and is often the repository of minute animals, or vegetable seeds, we need not be surprised that, when carried to sea, it is always found to putrefy. But we must not suppose that it is the element itself, which thus grows putrid and offensive, but the substances with which it is impregnated. It is true, the utmost precautions are taken to destroy, by boiling, all vegetable and animal substances, that may have previously been lodged in it: but, notwithstanding this, there are some that will still survive the operation; and others, that find their way during the time of its stowage. Seamen, therefore, assure us, that their water is generally found to putrefy twice, at least and sometimes three times, in a long voyage. In about a month after it has been at sea, when the bung is taken out of the cask, it sends up a noisome and dangerous vapour, which would take fire upon the application of a candle. The whole body of the water then is found replete with little worm-like insects, that float with great briskness, through all its parts. These generally live for about a couple of days; and then dying, by depositing their spoils, for a while increase the putrefaction. After a time, the heavier parts of these sinking to the bottom, the lighter float, in a scum, at the top; and this is what the mariners call, the water's purging itself. There are still, however, another race of insects, which are bred, very probably, from the spoils of the former, and produce, after some time, similar appearances; these dying, the water is then thought to change no more. However, it very often happens, especially in hot climates, that nothing can drive these nauseous insects from the ship's store of water. They often increase to a very disagreeable and frightful size, so as to deter the mariner, though parching with thirst, from tasting that cup which they have contaminated.

Of all the substances which are found upon the earth, or within its bowels, those from which the METALS are formed are the most curious. It is almost unnecessary to state, that they exist in the mine in a form very different from that which they assume when they have been melted in the furnace, and polished by the art of man. In their original state they are called ores, and the metal is then mixed with earthly particles and other matters, which are expelled by fire. The most precious metals, as gold and silver, do not form the most splendid ores. The *pyrites*, which are a mixture of iron and sulphur, are much more beautiful to the eye.

The trade of a miner is the most wretched and most dangerous of all. They are not only exposed to the common accidents of the roof falling in, or a sudden overflow of water, but also to a variety of *damps*, as they are called, or noxious vapours, which are fatal to human life. Of these there are two principal kinds, the *fire damp*, *inflammable air*, or *light carburetted hydrogen gas*, which will take fire and explode like gunpowder by the contact of flame: the other is the *choak damp*, *fixed air*, or *carbonic acid gas*, which kills immediately when taken into the lungs. The former of these is the most frequently and extensively destructive; more than a hundred miners have at once fallen victims to it. Sir Humphrey Davy has, however, deprived it of part of its terrific influence by his discovery of the safety lamp. Even the light and volatile parts of the minerals themselves, and especially arsenic, with which all mines abound, are imbibed by the unfortunate workmen, and rapidly effect their destruction. On this account coal mines are generally less noxious than those of tin; tin than those of copper or lead; but none are so dreadfully destructive as those of quicksilver. At the mines near Idria, in the Austrian dominions, nothing can adequately describe the deplorable infirmities of such as fill the hospital there: emaciated and crippled, every limb is contracted or convulsed, and some in a manner transpire quicksilver at every pore. "There was one man (says Dr. Pope) who was not in the mines above half a year, and yet whose body was so impregnated with this mineral, that putting a piece of brass money in his mouth, or rubbing it between his fingers, it immediately became as white as if it had been washed over with quicksilver. In this manner all the workmen are killed, sooner or later ed with iron ochre throughout its whole course from Idria to its confluence with the Lisonzo. At the same time every fish disappeared from the stream except the eel, which seems to bid defiance to every thing except actual broiling or roasting. Even when the galleries had been cleared of the water, it was impossible to work in them, partly from the heat which they still retained, but still more from the fumes of the sublimated mercury, which produced in the miners a violent salivation, accompanied with convulsions and trembling of the limbs. To produce an almost inhuman zeal, high wages were offered to such as would venture into places reckoned the most dangerous, to explore the consequence of the disaster, and collect the quicksilver which had been deposited in large quantities in the galleries. Many purchased this additional pittance with their lives; and the atmosphere, which continued for months to infect the mine, was so baneful, that it was difficult to muster a sufficient number of healthy men for ordinary operations.

A still more striking instance of the volatility, penetrating power, and noxiousness of mercurial vapours was afforded, in 1810, on board the Triumph man of war. This vessel had taken on board thirty tons of quicksilver, contained in leather bags of fifty pounds each, which had been picked up on the shore of Cadiz, from the wreck of two Spanish ships. The bags were stowed in the bread room, after hold, and store rooms. Being saturated with salt water, in about a fortnight they all decayed and burst. In collecting the quicksilver, to save it in casks, much of it found its way into the unapproachable recesses of the ship, and some was secreted by the men, who amused themselves with it in various ways. At this period so much bilge water had collected in the ship that the stench was intolerable, and the carpenter's mate was nearly suffocated by the effluvia while sounding the well. The effect of the gas evolved from bilge water is manifested by its changing to black any metallic substance. In this instance, however, metals of every kind were coated with quicksilver; and a general affection of the mouth took place among the men and officers, to a severe degree of salivation, in upward of two hundred men. It was, in consequence, necessary to take the Triumph into dock, remove all her stores, clean her hold thoroughly, and dislodge one of her lowest planks, in straits of Gibraltar in the third year.* Nevertheless, the ancients were not acquainted with the property which the loadstone has, of turning toward the poles, although they knew that it attracted iron. They were ignorant of the general cause of the flux and reflux of the sea; they were not certain that the ocean surrounded the globe without interruption; some indeed suspected it, but with so little foundation, that no one dared to say, or even conjecture, that it was possible to make a voyage round the world. Magellan, or rather Cano, for Magellan was slain at Zebu, was the first who made it, A. D. 1519, in twelve hundred and twenty-four days. Drake was the second, in 1577, and he accomplished it in one thousand and fifty-six days; Thomas Cavendish afterwards performed this great voyage in seven hundred and seventy-seven days, in the year 1586. These famous travellers were the first who demonstrated, physically, the globular form and the extent of the earth's circumference; for the ancients were far from having a just measure of this circumference. The general and regulated winds, and the use to be made of them in long voyages, were also absolutely unknown to them; we must therefore not be surprised at the little progress they made in geography; since at present, in spite of all the knowledge we have acquired by the aid of the mathematical sciences, and the discoveries of navigators, many things remain still to be found, and vast countries to be discovered.

An area of 145,600,000 square English miles, being nearly three-fourths of the surface of the globe, is occupied by the ocean and its inland seas and bays. Of this mighty mass of waters, about seven-twelfths lie in the southern hemisphere, and five-twelfths in the northern. In the one, the proportion of ocean to land is nearly as seven to five; in the other, it is as thirteen to two. The depth of the ocean we have no means of estimating with perfect accuracy. In some places it is certainly immense. From data furnished by the calculations of Laplace, the mean depth has been taken at two miles, which gives 290,000,000 of cubic miles for the cubic contents.

The FORM OF THE EARTH is not that of a perfect globe, but rather what is termed an oblate spheroid, a globe which is flattish at the poles; the axis, therefore, or line which may be supposed to pass through it at the equator, is to its

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* See Herod. lib. iv.

	Feet.	Inch.
14. Marl in stone, the grain not so fine	1	6
15. More grained and thicker marl	2	6
16. Very fine vitrifiable sand, mixed with sea fossil shells, which had no adherence with the sand, and whose colours were perfect	1	6
17. Very small gravel or fine marl powder	2	0
18. Marl in hard stone	3	6
19. Very large powdered marl	1	6
20. Hard and calcinable stone like marble	1	6
21. Gray and vitrifiable sand with fossil shells, particularly oysters and muscles, which had no adherence with sand, and were not petrified.	3	0
22. White vitrifiable sand mixed with shells	2	0
23. Sand streaked red and white, vitrifiable and mixed with the like shells	1	0
24. Larger sand, but still vitrifiable, and mixed with the like shells	1	0
25. Gray, fine, and vitrifiable sand, with similar shells	8	6
26. Very fine fat sand, with a few shells	3	0
27. Freestone	3	0
28. Vitrifiable sand, streaked red and white	4	0
29. White vitrifiable sand	3	6
30. Reddish vitrifiable sand	15	0
Total depth when they left off digging	100	6

In a trench made at Amsterdam to make a pit, the earth was dry to the depth of two hundred and thirty feet, and the strata of earth were found as follows: seven feet of vegetable or garden earth, nine feet turf, nine feet soft clay, eight feet sand, four feet earth, ten feet sand, on which it is customary to fix the piles which support the houses of Amsterdam; then two feet argil or clay, four of white sand, five of dry earth, one of soft earth, fourteen of gravel, eight argil, mixed with earth; four of gravel, mixed with shells; then clay one hundred and two feet thick, and at last thirty-one feet sand, at which depth they ceased digging.

Every stratum, whether horizontal or inclined, has an equal thickness throughout its whole extent: that is, every bed of any matter whatever, taken seperately, has an equal thickness throughout its whole extent; for example, when the bed of stone in a quarry is three feet thick in one part, it will have the same thickness throughout: if in one part it is found to be six feet thick, it will be so throughout. In the quarries about Paris the bed of good stone is not thick, scarcely more than eighteen or twenty feet; in other quarries, as those of Burgundy, the stone is much thicker. It is the same with marble; the black and white marble have a thicker bed; the coloured are commonly thinner, and there are beds of very hard stone, which the farmers in Burgundy make use of to cover their houses, that are not above an inch thick. In general it may be said, that the thickness of the horizontal strata is so greatly varied, that it is found from one line and less to one, ten, twenty, thirty, or one hundred feet thick; the ancient and modern quarries which are horizontally dug, and the perpendicular and other divisions of mountains, prove that there are extensive strata in all directions.

The progress of modern science has shown the ideas of Buffon, both with respect to the constituent materials of our globe and the arrangement of those materials, to be so erroneous, not to say absurd, that we must here desert him, and seek for other and safer guides to geological knowledge. The following outline of geology, from Mr. Maclaren's treatise in the Supplement to the Encyclopædia Britannica, and from Dr. Ure's excellent Dictionary of Chemistry, will give the general reader a sufficient insight into the subject.

"It would be foreign to our purpose," says Mr. Maclaren, "to enter into the disputes which divide geologists. Conceiving that the principles of geology, in the present day, are to be considered as little better than provisional, we shall recur to them as sparingly as possible. Of the central nucleus, as already stated, we can know nothing but by inference. The outer crust, however, lies exposed in part to our view, and the materials of which it is formed, so far as we are acquainted with them, consist of *four* great classes. 1. Those rocks which neither contain any animal or vegetable remains themselves, nor are intermixed with rocks which do contain them, and are therefore termed primitive or *primary*, as having been formed before the existence of organized beings. These are granite, gneiss, mica slate, and clay slate, which occur abundantly in all regions of the globe, with quartz rock, serpentine, granular limestone, &c. which occur more sparingly. These rocks never contain organic remains, and, till lately, were supposed never to cover rocks containing them; but a larger experience has shown, that this does not hold true entirely, even of granite itself. (Daubuisson, II. 226.) 2. Rocks containing organic remains, or generally associated with other rocks in which such substances are found, and which, as having been formed posterior to the existence of organized beings, are termed *secondary*. These are gray wacke, sandstone, limestone, and gypsum of various kinds, slate clay, with certain species of trap, and they are found lying above the primary or older rocks. 3. Above these secondary rocks, beds of gravel, sand, earth, and moss are found, which have been termed *alluvial* rocks or *formations*. 4. The name of *volcanic formations* has been given to beds of lava, scoriæ, and other matter thrown out at certain points of the earth's surface by subterranean fire.

" A very distinct arrangement can be traced among these rocks, though they present a confused appearance to the eye on a first view. Where those of the primitive and secondary classes are exposed together, the granite, which generally exists in unstratified masses, is found almost invariably under all the others; and yet it also occupies the highest points of the earth's surface. The gneiss, which is merely a stratified granite, lies next it; then the mica slate, then the clay slate. The primary limestone, trap serpentine, &c. lie in occasional beds intermixed with these. And above all, the primary formations are gray wacke, sandstone, and other secondary rocks. Farther, the primary rocks are in general highly crystalline in their structure; and at the points where they are exposed to view, are found standing on their edges, or inclining to the horizon, seldom at a less angle than forty-five degrees. The secondary rocks again have rather the appearance of mechanical deposits; they occupy a more horizontal position; and their upper edges, or *outgoings*, are generally found at a lower level than those of the primary class. On these facts, geologists have founded certain general conclusions. From the oblate spheroidal figure of the globe, and the arrangement of its mineral masses in beds or strata, they assume that the whole, or at least the outer crust, was at one time in a fluid state. That the central nucleus, of which we know nothing, is encompassed round and round by a coat or shell of granite, which, crystallizing from a fluid state by the force of a strong affinity, has assumed a very irregular figure, shooting up its elevated cones or ridges at some points, which form the naked summits of mountains

Class I. *Primitive Rocks.* 1. Granite. 2. Gneiss. 3. Mica slate. 4. Clay slate. 5. Primitive imestone. 6. Primitive trap. 7. Serpentine. 8. Porphyry. 9. Syenites. 10. Topaz rock. 11. Quartz rock. 12. Primitive flinty slate. 13. Primitive gypsum. 14. White stone

Class II. *Transition Rocks.* 1. Transition limestone. 2. Transition-trap. 3. Gray wacke. 4. Transition flinty slate. 5. Transition gypsum.

Class III. *Floetz Rocks.* 1. Old red sandstone, or first sandstone formation. 2. First or oldest floetz limestone. 3. First or oldest floetz gypsum. 4. Second or variegated sandstone formation. 5. Second floetz gypsum. 6. Second floetz limestone. 7. Third floetz limestone. 8. Rock salt formation. 9. Chalk formation. 10. Floetz trap formation. 11. Independent coal formation. 12. Newest floetz trap formation.

Class IV. *Alluvial Rocks.* 1. Peat. 2. Sand and gravel. 3. Loam. 4. Bog iron ore. 5. Nagelfluh. 6. Calc tuff. 7. Calc sinter.

Class V. *Volcanic Rocks.* *Pseudo volcanic rocks. 1. Burnt clay. 2. Porcelain jasper. 3. Earth slag. 4. Columnar clay iron stone. 5. Polier, or polishing slate. **True volcanic rocks. 1. Ejected stones and lava. 2. Different kinds of lava. 3. The matter of muddy eruptions.

"The primitive rocks," says Dr. Ure, "lie undermost, and never contain any traces of organized beings, imbedded in them. The transition rocks contain comparatively few organic remains, and approach more nearly to the chemical structure of the primitive than to the mechanical of the secondary rocks. As these transition rocks were taken by Werner from among those which, in his general arrangement, were called secondary, the formation of that class made it necessary to abandon the latter term. To denote the mineral masses reposing on the transition series, he accordingly employed the term floetz rocks, from the idea that they were generally stratified in places nearly horizontal, while those of the older strata were inclined to the horizon at considerable angles. But this holds good in regard to the structure of those countries only which are comparatively low: in the Jura chain, and on the borders of the Alps and Pyrenees, Werner's floetz formations are highly inclined. Should we, therefore, persist in the use of this term, says Mr. Conybeare, we must prepare ourselves to speak of vertical beds of floetz (i. e. horizontal, limestone, &c. As the inquiries of geologists extended the knowledge of the various formations, Werner, or his disciples, found it necessary to subdivide the bulky class of floetz rocks into floetz and newest floetz, thus completing a fourfold enumeration. Some writers have bestowed the term *tertiary* on the newest floetz rocks of Werner. The following synoptical view of geological arrangement is given by the Rev. Mr. Conybeare.

Character.	Proposed Names.	Wernerian Names.	Other Writers.
1. Formations chiefly of *sand* and *clay*, above the chalk.	*Superior order.*	Newest floetz class.	Tertiary class.
2. Comprising, a. Chalk. b. Sands and clays. c. Calcareous freestones, (*oolites*) and argillaceous beds. d. *New red sandstone, conglomerate, and magnesian limestone.*	*Supermedial order.*	Floetz class.	Secondary class.
3. Carboniferous rocks, comprising, a. *Coal measures.* b. *Carboniferous limestone.* c. *Old red sand stone.*	*Medial order.*	Sometimes referred to the preceding, sometimes to the succeeding class, by writers of these schools; very often the coal measures are referred to the former, the subjacent limestone and sandstone to the latter.	
4. *Roofing-slate, &c. &c. &c.*	*Submedial Order.*	Transition class.	Intermediate class.
5. *Mica slate, gneiss, granite, &c.*	*Inferior Order.*	Primitive class.	Primitive class.

In all these formations, from the lowest to the highest, we find a repetition of rocks and beds of similar chemical compositions; i. e. siliceous, argillaceous, and calcareous, but with a considerable difference in texture; those in the lowest formation being compact, often chrystalline, while those in the highest and most recent are loose and earthy. These repetitions form what the Wernerians call formation suites. We may mention,

1st. The *limestone suite.* This exhibits, in the inferior or primitive order, crystalline marbles; in the two next, or transition and carboniferous orders, compact and subcrystalline limestones (Derbyshire limestone) in the supermedial or floetz order, less compact limestone, (lias,) calca reous freestone (Portland and Bath stone,) and chalk; in the superior or newest floetz order, loose earthy limestones.

2. The *argillaceous suite* presents the following gradations; clay slate, shale of the coal measures, shale of the lias, clays alternating in the oolite series, and that of the sand beneath the chalk; and, lastly, clays above the chalk.

3d. The *siliceous suite* may (since many of the sandstones of which it consists present evident traces of felspar and abundance of mica, as well as grains of quartz, and since mica is more or less present in every bed of sand) perhaps deserve to have granite placed at its head, as its several members may possibly have been derived from the detritus of that rock: it may be continued thus; quartz rock and transition sandstone, old red sandstone, millstone grit, and coal grits, new red sandstone, sand and sandstone beneath the chalk, and above the chalk. In all these instances a regular diminution in the degree of consolidation may be perceived in ascending the series.

We noticed before, that the remains of vegetables and animals are confined to the secondary formations. We have now to add, that they are not irregularly dispersed throughout the whole series of these formations, but disposed as it were in families, each formation containing an association of species peculiar, in many instances, to itself, widely differing from those of other formations, and accompanying it through its whole course; so that at two distinct points on the line of the same formation, we are sure of meeting the same general assemblage of fossil remains. It will serve to exemplify the laws which have been stated, if the observer's attention is directed to two of the most prominent formations of this island; namely, the chalk and the limestone which underlie the coal in Northumberland, Derbyshire, South Wales and Somerset. Now, if he examines a collection of fossils from the chalk of Flamborough Head, or from that of Dover Cliffs, or, it may be added, from Poland or Paris, he will find eight or nine species out of ten the same; he will observe the same echinites associated with the same shells; nearly one half of these echinites he will perceive to belong to divisions of that family unknown in a recent state, and indeed in any other fossil bed except the chalk. If he next proceeds to inspect parcels of fossils from the carboniferous limestone, he will in the same manner find them to agree with each other, from whichever of the above localities they may have been brought; that is, he will find the same corals, the same encrinites, the same productæ, terebratulæ, spiriferæ, &c. But, lastly, if he compares the collection from the chalk with that from the mountain lime, he will not find one single instance of specific agreement, and in very few instances any thing that could deceive even an unpracticed eye, by the superficial resemblance of such an agreement.

If we cast a rapid view over the phenomena of this distribution, the subject must appear to present some of the most singular problems which can engage the attention of the inquirer into nature. First, we have a foundation of primitive rocks destitute of these organic remains; in the next succeeding series, (that of transition,) corals, encrinites, and testacea, different however from those now known, appear at first sparingly. The fossil remains of the carboniferous limestone are nearly of the same nature with those in the transition rocks, but more abundant; the coal measures (coal strata) however, themselves, which repose on this limestone, present scarcely a single shell or coral; but, on the contrary, abound with vegetable remains, ferns, flags, reeds of unknown species, and large trunks of succulent plants, *strangers to the present globe.* Upon the coal rest beds again containing marine remains, (the magnesian limestone,) then a long interval (of new red sandstone) intervenes, destitute almost, if not entirely, of organic remains, preparing the way, as it were, for a new order of things. This order commences in the lias, and is continued in the oolites, green and iron sands, and chalk. All these beds contain corals, encrinites, echinites, testacea, crustacea, vertebral fishes, and marine oviparous quadrupeds, yet widely distinguished from the families contained in the lower beds of the transition and carboniferous class, and particularly distinguished among themselves, according to the bed which they occupy. Hitherto the remains are always petrified, i. e. impregnated with the mineral substance in which they are imbedded. But lastly, in the strata which cover the chalk, we find the shells merely preserved; and in such a state, that when the clay or sand in which they lie is washed off, they might appear to be recent, had they not lost their colour, and become more brittle. Here we find beds of marine shells alternating with others peculiar to fresh water, so that they seem to have been deposited by *reciprocating inundations* *of fresh and salt water.* In the highest of the regular strata, the crag, we at length can find an identity with the shells at present existing on the same coast; and, lastly over all these strata indiscriminately, there is spread a covering of gravel (seemingly formed by the action of a deluge, which has detached and rounded by attraction fragments of the rocks over which it swept) containing the remains of numerous land quadrupeds, many of them of unknown genera or species (the mastodon, and the fossil species of the elephant, or mammoth, bear, rhinoceros, and elk,).mingled with others, (hyenas,) &c. equally strangers to the climates where they are now found, yet associated with many at present occupying the same countries.

Another class of substances imbedded in the secondary strata, and throwing light on the convulsions amidst which they have been formed, are the pebbles, or rolled fragments of rocks, older than themselves, which they are often found to contain. Thus the lower beds of the supermedial order (namely, the conglomerate rocks of the new red sandstone) contain, in great abundance, rolled fragments of the carboniferous limestone belonging to the class next below it, (the medial order,) as well as of many still older rocks; being in fact only a consolidated mass of gravel, composed of *débris* of these rocks.

The necessary inferences from this fact are, first, The rock whence the fragments were derived must have been consolidated, and, subsequently to that consolidation, have been exposed to the mechanical violence (probably the action of agitated waters) which tore from it these masses, and rounded them by attrition, before the rock in which these fragments are now imbedded was found: and, secondly, Since loose gravel beds (and such must have been the original form of these, though now consolidated into conglomerate rocks) cannot be accumulated to any extent from the action of gravity on a highly inclined plane, we are sure, when we find such beds as we often do, in nearly vertical strata, that this cannot have been their original position, but is one into which they have been forced by convulsions which have dislocated them subsequently to their conglomeration. These consolidated gravel beds are called conglomerates, breccias, or pudding stones; we find them among the transition rock, in the old red sandstone, in the millstone grits and coal grits, in the lower members of the new red sandstone, in the sand strata, beneath the chalk, and in the gravel beds associated with the plastic clay, and interposed between the chalk and great London clay.

From the occurrence of the marine remains lately noticed, occupying, as they do, rocks spread over two thirds of the surface of every part of our continents which have been explored, and rising to the highest situations, even to the loftiest summits of the Pyrenees, and still more elevated points on the Andes, it is an inevitable inference, that the greater part of those continents have not only been covered by, but have been formed of, materials collected within the bosom of the ocean; that we inhabit countries which we may truly call *factas ex æquore terras*. The great and fundamental problem, therefore, of theoretical geology, is obviously to assign adequate causes for the change of level in this ocean, which has permitted these masses, which once formed the bottom of its channel, to rise in hills and mountains above its waves. The causes which it is possible to imagine, are reducible to two general classes. First, the decrease of the absolute quantity of water. This must have resulted from causes entirely chemical, namely, the decomposition of some portion of the water, its constituents entering into new forms of combination; and its fixation in the rocks formed beneath it. It is probable that these causes have operated in some degree; but it seems impossible to ascribe to them the very great difference of level for which we have to account.

The second class of possible causes is entirely mechanical; those, namely, which may have produced a change of relative level without any dimunition of absolute quantity in the waters.

The causes of this kind which have been proposed are first, The absorption of the water into a supposed central cavity; but the now ascertained density of the earth (being greater than that which would result from an entirely solid sphere of equal magnitude of the most compact known rock,) renders the existence of any such cavity very doubtful.

Secondly, A writer in the Journal of the Royal Institution, vol. ii, has proposed the very ingenious hypothesis, that a change of temperature of a few degrees will, from the unequal expansibility of the materials of land and water, sufficiently account for this change of level.

Thirdly, It has been ascribed to violent convulsions, which have either heaved up the present continents, or which amounts to the same thing, (as the same relative change must have taken place in either view,) depressed the present channel of the ocean. If the violent elevation of the continent, or depression of the channel of the ocean, supposed in the last mentioned hypothesis, really took place, it must have left traces in the disturbed, contorted, and highly inclined position of the strata; and these disturbances must be greatest where the change of level has been the greatest, i. e. in the neighbourhood of the loftiest mountains. Now this is actually the case.

In support of the hypothesis which ascribes an important part to volcanic agency in modifying the surface of our planet, the following, at least plausible, arguments may be adduced.

1. It must be kept in view, that the object is to assign an adequate cause for the undoubted fact of the emergence of the loftiest mountains of the present continent; and that when so mighty an effort is to be accounted for, the mind must be prepared to admit, without being startled causes of a force and energy greatly exceeding those with which we are acquainted from actual observation.

2. The broken and inclined state, and inclined position of the strata composing those continents, many of which must have been at the time of their original formation horizontal, indicate, as we have seen, that one at least of the causes operating to effect this great change of relative level between the land and waters, was the elevation of the former by mechanical force.

3. The only agent with which we are acquainted, whose operation bears any analogy to the effects above specified, is the volcanic energy, which still occasionally forms new islands, and elevates new mountains.

4. Although these effects are now indeed partial and limited, yet there is certain proof that volcanic agency has formerly been much more active; the extinct volcanoes of the Rhine, Hungary, and Auvergne, as well as those which occupy so large a portion of Italy, where only one remains in activity, concur in proving, that at present we experience only the expiring efforts, as it were, of those gigantic powers which have once ravaged the face of nature.

5. If to this certain proof of the greater prevalence of

volcanic convulsions in earlier, but still comparatively recent, periods of the history of our planet, we add the presumption that the trap rocks (so singularly intruded among the regular strata, and producing, where they traverse those strata, so precisely the effects of heat acting under compression, and so different in all their phenomena from formations decidedly aqueous) were of volcanic origin, we shall find scarcely a country existing which has not been a prey to the ravages of this powerful principle. If, with many of the best geological observers, (Dr. M'Culloch, Von Buch, Necker, &c.,) we incline to extend the same conclusions to granitic rocks, a mass of volcanic power, clearly adequate to all the required effects, is provided.

6. The question will undoubtedly present itself, what is the source of volcanic action? And sufficient proof exists, that this source is deeply seated beneath the lowest rocks with which our examination of the earth's surface makes us acquainted; for, in Auvergne, the lavas have evidently been erupted from beneath the primitive rocks.

7. The very important recent discoveries with regard to the increased temperature noticed in descending deep mines, &c. by Messrs. Fox and Fourrier, will, if confirmed by further examination, prove, that some great source of heat exists beneath the earth's crust.

8. A degree of presumption may be thought to arise from these considerations, that the crust of the earth rests on a heated nucleus, the true source of volcanic energy. If this nucleus be in a fluid or viscous state, its undulations would readily account for the convulsions which have affected that crust, both in originally dislocating and elevating portions of its strata, and in the actual phenomena of earthquakes (of many of which phenomena no other hypothesis appears to offer a sufficient explanation) while, at the same time, it would afford an adequate reason for the figure of the globe as a spheroid of rotation.

9. On this supposition, we should at once perceive a reason why the effects of the volcanic force may have been much more violent in earlier periods, while that mass of deposites which now covers the supposed volcanic nucleus was but gradually forming over it than at present; and we shall also find a reason for the higher temperature, which many of the remains of both the animal and vegetable kingdoms, found in the strata of countries now too

cold for the existence of their recent analogies, appear to indicate as having formerly prevailed.

10. It must be remembered, that one of the essential conditions of the theory above sketched is, the operation of volcanic agency beneath the pressure of an incumbent ocean; and that it does not, therefore, in any degree question the Neptunian origin of the majority of the rocks which have evidently been formed in the bosom of the ocean. With regard to the trap rocks alone, and perhaps the granitic, does it venture even to insinuate an opposite mode of formation?

Mr. Couybeare next shows, that the Wernerian generalization of the phenomena is too hasty. It supposes the oasset edges of the strata to occupy levels successively lower and lower in proportion as they are of less ancient formation, and as they recede from the primitive chains, forming the edges of the basins in which they have been deposited. For if we compare the basset edges of the same strata on the opposite sides of the great European basin (assuming the primitive ranges of our own island as one of its borders, and those of the Alpine chains as the other,) we shall find their level totally different.

The oolite, for instance, whose highest point with us is less than 1200 feet, attains a height of more than 4000 in the Jura chain, and in the mountains of the Tyrol has been observed by Mr. Buckland crowning some of the loftiest and most rugged summits of the Alps themselves. Again, if we compare the inclination of the strata at the edges or the basin, we shall find every thing but the supposed regular gradation, from a highly elevated to a horizontal position: on the contrary, we shall see the horizontal beds generally reposing at once upon the truncated edges of those which lie at very considerable angles; and in place of the general conformity or parallelism which ought to prevail between the several formations, we shall observe, in many instances, appearances of the greatest irregularity in this respect; and these irregularities will be found to increase in approaching those chains which are the most elevated.

But if we suppose, that during the regular and gradual subsidence of the level of the ocean in the Wernerian system, the continents were elevated by mechanical forces acting in a series of great convulsions, we shall, perhaps, obtain a nearer approximation to agreement with the actual phenomena as deduced from observation. If these general tendency to a direction from north-west toward south and east, greatly modified, however, by obvious local circumstances.

" Another circumstance connected with the distribution of these travelled fragments is, that we often find them in masses of considerable size, accumulated in situations now separated by the intervention of deep valleys from the parent hills, (if we may so speak,) whence we know them to have been torn. This appears to be a demonstrative proof that these intervening valleys must have been excavated subsequently to the transportation of these blocks; for though we can readily conceive how the agency of violent currents may have driven these blocks down an inclined plane, or if the *vis a tergo* were sufficient, along a level surface, or even a slight and very gradual acclivity; it is impossible to ascribe to them the Sisyphean labour of rolling rocky masses, sometimes of many tons in weight, up the face of abrupt and high escarpments. The attentien of geologists was first directed to this phenomenon by the discoveries of Saussure, who noticed one of its most striking cases—the occurrence of massive fragments torn from the primitive chains of the Alps, scattered at high levels on the escarpment of the opposite calcareous and secondary chains of the Jura, although between the two points the deep valley containing the lake of Geneva is interposed. This phenomenon is one of very common occurrence. The downs surrounding Bath, (Hampton Down for example,) though abruptly scarped, and surrounded by valleys more than six hundred feet deep, have yet on their very summits flints transported from the distant chalk hills. The simplest explanation of this fact will be, that these fragments were transported by the first action of the currents, before they had effected the excavation of the valleys, now cutting off all communication with the native rocks whence they were derived.

" The organic remains of land animals dispersed through this diluvial gravel must, with the greatest probability, be referred to the races extinguished by the great convulsion which formed that gravel; many of them are of species still inhabiting the countries where they are thus found; some of the species now inhabiting only other climates; and some few, of species and genera now entirely unknown.

" To the same period we may ascribe the bones of the

same species with the above, found in many caverns; but, in many of these instances, it is probable that some of the animals now found there, previously inhabited them as their dens. Professor Buckland appears to have proved satisfactorily, that this must have been the case in the remarkable instance of the cavern lately discovered near Kirby Moorside, Yorkshire. Here the remains found in the greatest abundance are those of hyenas; with these are mingled fragments of various animals, from the mammoth to the water rat. All the bones present evident traces of having been mangled and gnawed; and the whole are buried in a sediment of mud subsequently incrusted over by stalactitical depositions. Professor Buckland's explanation is, that this cavern was occupied by the hyenas; who, according to the known habits of these animals, partially devour even the bones of their prey, and dragged them for that purpose to their dens; around their retreats, a similar *congeries* of mangled bones has been noticed by recent travellers. The proofs of these points, deduced from the circumstances of the cavern, the state of the bones, and the ascertained habits of the animals in question, appear to be decisive. The sediment in which the bones are imbedded, and the occurrence of the remains of the mammoths, and other species, only known (in these climates at least) in a fossil state, in the diluvial gravel, clearly refers their remains to the same era. Caverns containing bones of a similar class, the mammoth, the fossil species of rhinoceros, &c. have been found near Swansea, at Hatton Hill (on the Mendip chain in Somersetshire,) and near Plymouth. *Rev. W. Conybeare, Introduction.*

" The ancient history of the globe, which may be regarded as the *ultimate* object of geological researches, is undoubtedly one of the most curious subjects that can engage the attention of enlightened men. The lowest and most level parts of the earth, when penetrated to a very great depth, exhibit nothing but horizontal strata, composed of various substances, and containing, almost all of them, innumerable marine productions. Similar strata, with the same kind of productions, compose the hills even to a great height. Sometimes the shells are so numerous as to constitute the entire body of the stratum. They are almost every where in such a perfect state of preservation, that even the smallest of them retain their most delicate parts, their sharpest ridges, and tenderest processes. They are found in elevations far above the level of every part of the ocean, and in places to which the sea could not be conveyed by any previously existing cause. They are not merely enclosed in loose sand, but are often incrusted and penetrated on all sides by the hardest stones. Every part of the earth, every hemisphere, every continent, every island of any size, exhibits the same phenomenon. We are therefore forcibly led to believe, not only that the sea has at one period or another covered all our plains, but that it must have remained there for a long time, and in a state of tranquillity; which circumstance was necessary for the formation of deposites so extensive, so thick, in part so solid, and containing *exuviæ* so perfectly preserved. A nice and scrupulous comparison of the forms, contexture, and composition of these shells, and of those which still inhabit the sea, cannot detect the slightest difference between them. They have therefore, once lived in the sea, and been deposited by it; the sea consequently must have rested in the spots where the deposition has taken place. Hence it is evident, that the basin or reservoir containing the sea has undergone some change, either in extent, situation, or both.

" The traces of revolutions become still more apparent and decisive when we ascend a little higher, and approach nearer to the foot of the great chain of mountains. There are still found many beds of shells; some of these are even larger and more solid; the shells are quite as numerous, and as entirely preserved; but they are not of the same species with those which were found in the less elevated regions. The strata which contain them are not so generally horizontal; they have various degrees of elevation, and are sometimes situated vertically. While in the plains and low hills it was necessary to dig deep in order to detect the succession of the strata, here we perceive them by means of the valleys, which time or violence has produced, and which disclose their edges to the eye of the observer.

" Thus the sea, previous to the formation of the horizontal strata, had formed others, which by some means have been broken, lifted up, and overturned in a thousand ways. But the sea has not always deposited stony substances of the same kind. It has observed a regular succession as to the nature of its deposites; the more ancient the strata are so much the more uniform and extensive are they; and the unfrequently of extinct species. They are also, in some instances, of a magnitude much superior to any of the similar animals which we now possess. Vestiges have been discovered of beasts, birds, fishes, the crustaceous tribes plants, and even seeds, fruits, and flowers. Of the contemporary existence of man, however, not a trace is to be seen. At least the largest portion, but probably the whole of the creatures whose fossilized wrecks are scattered over the globe had no earthly master.

Among the gigantic species which have ceased to exist may be noticed an elk, nine feet long, six feet high, and more than nine feet and a half in height to the tip of the right horn—a bat, which must have measured nearly seven feet between the tips of the wings—a bear, the Ursus spæleus, rivalling the horse in magnitude—the Megatherium, a species of sloth, the most massive, rude, and unshapely of quadrupeds, whose skeleton has a length of fourteen Spanish feet, and a height of seven—the great mastodon of the Ohio, as tall as the elephant, but with larger and thicker limbs—a tapir, eighteen feet long, and twelve high—the Lacerta gigantea, or Mosasaurus, a lizard, the skeleton of which is twenty-four feet long—and the still more enormous Megalosaurus, of the same class, which has the amazing length of forty feet, with a height of eight.

CHAPTER II.

Of Mountains—Precipices—Clefts, or Caverns—Rivers—the Nile—Cataracts—Subterraneous Rivers—Saltness of the Sea—of different Seas—of Lakes—their Nature and Properties.

Were the earth an even and regular plain, instead of that beautiful variety of hills and valleys, of verdant forests, and refreshing streams, which at present delight our senses, a dismal sea would cover the whole face of the globe, and at best it would only be the habitation of fishes.

It is not therefore to be supposed that even in its origin the surface of the earth was perfectly regular; and since its first production a variety of causes have greatly contributed to the increase of this irregularity.

The greatest inequalities are the depths of the ocean, compared to the elevations of mountains; the depth is very different even at great distances from land; and the most general profundities are from sixty to one hundred and fifty fathoms. The gulfs bordering on the coasts are much less deep, and the straits have generally the least depth.

The highest MOUNTAINS in Asia are Mounts Imaus, Taurus, Caucasus, and the mountains of Japan; all these mountains are loftier than those of Europe: and those of a part of Imaus, or Himalaya, have recently been ascertained to be the loftiest on the globe. The highest mountains in Africa, i. e. the great Atlas, and the Mountains of the Moon,* are at least as high as those in Asia, with the exception of the Himalaya; but those which were long supposed to be the highest of all are in South America, particularly the Andes in Peru, which are more than three thousand fathoms, that is upward of three miles high; whereas the highest part of the Alps is not more than one thousand six hundred fathoms, or a mile and a half in height. In general, the mountains between the tropics are loftier than those of the temperate zones, and these more than those of the frigid zone; so that the nearer we approach the equator, the greater are the inequalities of the earth: these inequalities, although very considerable with respect to us, are nothing when considered with respect to the terrestrial globe. Three thousand fathoms difference to three thousand leagues diameter, is one fathom to a league, or one foot to two thousand three hundred feet, which on a globe of two feet and a half diameter, does not make the sixth part of a line, or the ninetieth part of an inch. Thus the earth, which appears to us crossed and cut by the enormous height of the mountains, and by the frightful depth of the sea, is nevertheless, relatively to its volume, only very slightly furrowed with irregularities, so very trifling, that they can cause no difference to the figure of the globe.

In continents the mountains are continued, and form chains. In islands they appear to be more interrupted and isolated and generally raised above the sea, in form of a cone or pyramid, and are called *peaks*. The peak of Teneriffe is one of the highest mountains on the earth; it is nearly a mile and a half high perpendicular from the level of the sea: the peak of St. George, in one of the Azores, and the peak of Adam, in the island of Ceylon, are also very lofty. All these peaks are composed of rocks heaped one upon the other, and they occasionally vomit forth fire, cinders, bitumen, minerals, and stones. There are even islands which are precisely only as tops of mountains. as the island of St. Helena, Ascension, most of the Azores, and Canaries: and we must remark, that in most of the islands, promontories, and other projecting lands in the sea, the middle is always the highest, and they are generally separated by chains of mountains, which divide them in their greatest length.

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* Famous for giving a source to the rivers Niger and Nile.

Precipices are formed by the sinking of rocks, the base of which sometimes gives way more on one side than the other, by the action of the air and frost, which splits and divides them; and by the impetuous fall of torrents, which opens passages, and carries along with them all that opposes their violence. But ABYSSES, that is, those vast and enormous cavities found at the summit of mountains. and to the bottom of which it is not possible sometimes to descend, although they are above a mile or half a mile round, have generally been formed by the operation of fire. These abysses were formerly the funnels of volcanoes, and all the matter which is there deficient has been ejected by the action and explosion of these fires, which are since extinguished through a defect of combustible matter. The abyss of mount Ararat, of which M. Tournefort gives a description in his voyage to the Levant, is surrounded with black and burnt rocks, as one day the abysses of Etna, Vesuvius, and other volcanoes will be, when they have consumed all the combustible matters they include.

There are other abysses, which are not on the summits of mountains. Many of them, perhaps all, are only openings to caverns. Plot, in his Natural History of Staffordshire, speaks of a gulf called Elden Hole, in Derbyshire, on the side of a hill, the opening of which was not more than seven yards one way, and fifteen the other, and to which no bottom could be found. Cotton says, that he sounded it in vain with a line of eight hundred fathoms. Some years since, however, a Mr. Lloyd succeeded in exploring this supposed bottomless profundity. "He was let down," says the narrative, "by two ropes about forty fathoms long; for the first twenty yards, though he descended obliquely, he could assist himself with his hands and feet; but below this, the rock projecting in large irregular crags, he found it very difficult to pass; and on descending ten yards more, he perceived that the rope by which he was suspended was at least six yards from the perpendicular. From hence, the breadth of the chink was about three yards, and the length about six; the sides were very irregular, and the crags were covered with moss, besides being wet and dirty. Within fourteen yards of the bottom, the rock opened on the east side, and he swung till he reached the floor of the cavern, which was at the depth of sixty-two yards from the mouth. The light, however, which came from above was sufficient to read any print. Here he found the cavern to consist of two parts: that in which he alighted was like an oven; the other, where he first began to swing, was a vast dome, shaped like the inside of a glass house, and a small arched passage formed a communication between them; in this passage the stones which had been thrown in at the top (with the hope of filling up the abyss) formed a slope, extending from the wall at the west side of the first dome almost to the bottom of the second cave or oven, so that the farther end of the cave was lower by twenty-five yards than where he alighted. The diameter of this cavern he judged to be about fifty yards; the top he could not trace with his eye, but had reason to believe that it extended to a prodigious height; for, when he was nearly at the top of one of the incrusted rocks, which was an elevation of at least twenty yards, he could even then see no enclosure of the dome, though of course he saw much farther than when he stood at the bottom. After climbing up a few loose stones on the south side of the second cavern, he descended again through a small aperture, into a little cave, about four yards long and two yards high. which was lined throughout with a kind of sparkling stalactites of a very fine deep yellow, with some small stalactitical drops hanging from the roof. He found a noble column, of about ninety feet in height, of the same kind of incrustation, facing the first entrance. As he proceeded to the north. he came to a large stone that was covered with the same substance, and under it he found a hole two yards deep, that was uniformly lined with it. From the edge of this hole sprung a rocky ascent, sloping like a buttress against the side of the cavern, and consisting of vast solid round masses, of the same substance and colour. He climbed up this decent, to the height of about sixty feet, and got some fine pieces of the stalactites, which hung from the craggy sides of the cavern which joined the projection he had ascended. Having got down, which was not effected without considerable difficulty and danger, he proceeded in the same direction, and soon came to another pile of incrustations of a different kind and colour; these being much rougher, and not tinged with yellow but brown. At the top of this he found a small cavern, opening into the side of the vault, which he entered, and where he saw vast drops of the stalactites hanging, like icicles, from every part of the roof; some of which were four or five feet long and as thick as a man's body. The greater part of the walls of the large cavern, or vault, was lined with incrustations of three kinds: the first was the deep yellow stalactites; the second was a thin coating, resembling a light coloured varnish (this covered the limestone, and reflected the light of the candles with great splendour;) the third was a rough efflorescence, every shoot of which resembled a kind of rose flower. He now returned through the arch which separates the two vaults, reascending the slope of loose stones, which greatly lessened the magnificence of the entrance into the inner cavern. When he had again fastened the rope to his body, he gave the signal to be drawn up, which he found much more dangerous and difficult than being let down, on account of his weight drawing the rope between the fragments of the rocks, to which he adhered, and his body jarring against the sides, notwithstanding the defence he made with his hands. The rope also loosened the stones over his head, the fall of which he dreaded every moment; and if any of them had fallen, he must inevitably have perished. Being obliged to ascend with his face towards the wall, he could not make any particular observations on the rocks that were behind or on each side of him; he saw, however, under the projection of the rock, where the passage first became narrow, the entrance of a cavern which seemed to penetrate a great way, but he could not get into it."

A far more terrific abyss exists in the bowels of a rock near Castleton, in Derbyshire, into which a level has been driven, in search of lead ore. The visiter enters by a descent of a hundred and six steps, and then proceeds along tion, force them into the cavity, whence they never return. Their several sounds, however, are heard as they descend; the bleating of sheep, the lowing of oxen, and the neighing of horses, issuing up the mouth of the cavern. Nor do these sounds cease, as the place is continually furnished with a fresh supply."

Great cavities and deep mines are generally in mountains, and they never descend to a level with the plains: therefore, by these cavities, we are only acquainted with the inside of a mountain, and not at all with the internal part of the globe.

It was for a long time thought that the chains of the highest mountains ran from east to west, till the contrary direction was discovered in the new world; but no person before Mr. Bourguet discovered the surprising regularity of the structure of those great masses: he found, after having crossed the Alps thirty times in fourteen different parts, twice the Appenine mountains, and made several tours in the environs of these mountains, and in mount Jura, that all mountains are formed nearly like the works of a fortification. When the body of the mountain runs from east to west, it forms prominences, which face as much as possible the north and south; this admirable regularity is so striking in valleys, that we seem to walk in a very regular covered way; if, for example, we travel in a valley from north to south, we perceive that the mountain which is on the right forms projections or angles which front the east, and those of the mountain on the left front the west, so that, in fact, the salient angles of each side reciprocally answer the returning angles, which are always alternately opposed to them. The angles which mountains form in great valleys are less acute, because the direction is less steep, and as they are farther distant from each other; and in plains they are not so perceptible as in the course of rivers, which generally take up their elbows; the middle of them naturally answers to the most striking projections, or the most advanced angles of mountains; and this is one cause of the serpentine course of rivers. When in a valley the inclination of one of the mountains which border it is less steep than that of the other, the river takes it course much nearer the steepest mountain, and does not flow through the middle.

Modern writers class mountains into systems, groups de Sancy. 2. The *Central* or *Helvetic* group, comprising the chain of the Jura, the Greek, Cottian, Lepontine Alps. &c. Mount Blanc towers above all, to an elevation of 2460 fathoms. 3. The *Southern* or *Italic* group includes the various branches of the Appenine, and their extension into Sicily. Its highest summits are Monte Cavallo, in Ulterior Abruzzo, which has 1489 fathoms, and Mount Etna in Sicily, which has 1700 fathoms. 4. The *Oriental* or *Slavo-Hellenic* group, composed of several chains and branches, which extend into Bosnia, Servia, Bulgaria, Thrace, Macedonia, Albania, Epirus, Thessaly, and the Morea. Its loftiest points are Mont Dinara, 1166 fathoms; the chain of Pindus, 1400 fathoms; the Balkan 1300 to 1400 fathoms; and the chain of Rhodope, 1200 fathoms. 5. The *Northern* or *Slavo-Germanic*, group is divided from the central group by the lake of Constance, the Lech, and the Danube. Its most elevated point, in the eastern Carpathians, is the Ruska-Poyana, which has 1550 fathoms; and, in the western Carpathians, the Eisthaler Spitze, which has 1333 fathoms.

C. The SARMATIC SYSTEM is composed only of small mountains and very extensive table lands, which occupy European Russia, Fionia, Pomerania, and Eastern Prussia. The chain of the right bank of the Volga is its loftiest point, but rises only to 250 fathoms.

D. The SCANDINAVIAN SYSTEM extends from the northern extremity of Europe, or Finmark, to the southern extremity of Sweden. It comprehends three groups. 1. The *group of Kælen*, the highest point of which, the Sulitelma, has 951 fathoms. 2. The *group of Dovez*, the culminant point of which, the Sneehaelta, has 1270 fathoms. 3. The *group of Herdamguerfield*, the loftiest point of which is the summit of the Segnefield, 1123 fathoms.

E. The BRITANNIC SYSTEM contains four groups. 1. The *Northern*, composed of the mountains of Caithness, Inverness, &c. comprehends also the Orcadian and Hebridian islands, which are merely the extremities of their ramifications. 2. The group of the *Grampians*. 3. The group of the *Cheviots;* and, 4. The *Irish* group, formed of all the small chains which cover Ireland. The most towering point in the whole system is Ben Nevis, in the Grampians, which is 727 fathoms in height.

F. The SARDO-CORSICAN SYSTEM, so denominated by M. Burguine, in his Picture of Mountains, is composed of wo groups. 1. The *Corsican* group, the highest point of which is Mont Rotondo, 1418 fathoms; and 2. The *Sardinian* group, the most elevated point of which is the Genargentu, 938 fathoms.

ASIA. The four Asiatic systems bear the following denominations.

A. The HIMALAYAN SYSTEM, the most considerable, not only of Asia, but of all the globe, is composed of four groups. 1. The *Uralian* group, which separates Europe from Asia; the highest point, 1416 fathoms, is Mount Tanagai. 2. The *Altaic* group, which succeeds the first, in the direction of from west to east; its summits are, Mount Joblonnoi, which the Mongals call Daba, 2334 fathoms, and Mount Italizkoi, 1678 fathoms. 3. The *Indo-Persic* group, the principal chain of which is the Himalaya. The loftiest points of this group (and of the globe) are the Dhawalagiri, 5300 fathoms; the Chamalari, 4400 fathoms; and the peak of Jawahir, 4026 fathoms. 4. The *Sinic* group is separated from the Indo-Persic group by the course of the Burhampooter. Its most elevated points are, the Petcha or Hamar, about 3200 fathoms; and Mount O-lun-chun, about 2000 fathoms.

B. The INDIAN SYSTEM is separated from the Himalayan by the course of the Ganges. It is composed of four groups. 1. The *Kimur* mountains, the ramifications of which appear to unite with the mountains which cover the peninsula of Guzarat. 2. The *Gandwana* mountains, which unite, to the southwest, with the Bundeh mountains. 3. The group of the *Ghauts*, which extends along the whole western coast of India. 4. The *Ceylonese* mountains, which are only a continuation of the Ghauts. The highest points are Mount Taddiandamalla, in the Ghauts, 887 fathoms, and Adam's Peak, in the island of Ceylon, 1000 fathoms.

C The CAUCASIAN SYSTEM comprehends two groups. 1. That of *Caucasus*, the most elevated point of which is that of Kasbeck, 2400 fathoms; and 2. The group of *Taurus*, of which Mount Ararat, 1800 fathoms, is the highest point.

D. The ARABIAN SYSTEM, entirely separated from the preceding, is composed of three groups, which rise amidst the sandy deserts of Arabia. 1. The group of *Sinai*, elevated about 1000 fathoms. 2. The group of *Tehama*, which throws out branches in various directions. 3. The group of *Oman*, which borders on the coast of the Persian gulf.

AFRICA. According to what is known of this part of the globe, its mountains may be divided into four systems.

A. The ABYSSINIAN SYSTEM is composed of the great chain of the mountains of the Moon, of those of the mountains of Tegha, and of those which border the Red Sea. Mount Amba-Geshen, 2300 fathoms, is the loftiest point.

B. The CAFRO-GUINEAN SYSTEM begins to the north of the equinoctial line, comprehends the *Lupata* mountains, and those of the *Cape of Good Hope*, and terminates in small hills on the coast of Guinea. Its loftiest point is the highest peaks of the Nieuweveld mountains, which have an elevation of 1600 fathoms.

C. The SENEGAMBIAN SYSTEM gives birth to the rivers Senegal and Senegambia; its height is unknown.

D. The BARBARY SYSTEM. The chain of Mount *Atlas* and the *Ammer* mountains form its principal group. The *Atlas*, with an elevation of about 2300 fathoms, is its loftiest point.

AMERICA. The American continent comprises five systems, of which two belong to North America, and three to South America.

A. The OREGO-MEXICAN SYSTEM, beginning at the most northern extremity of America, and terminating near the Gulf of Darien, is divided into two groups. 1. The *Western* group, comprehending the *Cordillera of New Cornwall*, and that of *California;* the loftiest point is Mount Saint Elias, 2793 fathoms. 2. The *Eastern* group, comprising the *Oregon* or *Rocky Mountains*, the *Asark* mountains, the *Cordillera of New Mexico*, that of *Durango*, those of *Oaxaco*, and of *Mexico*, and those of *Guatimala*, *Veragua*, and *Costa Rica*. The superior points of these are, the Big Horn, in the Rocky mountains, about 2120 fathoms; the Popocatepelt, a volcano in the Cordillera of Oaxaco and Mexico, 2771 fathoms; the eastern peak in the Cordillera of Guatimala, 2330 fathoms.

B. The ALLEGHANIAN SYSTEM is formed of several chains united as one sole group. The loftiest point is the Washington, 1040 fathoms.

C. The ANDO-PERUVIAN SYSTEM may be considered as formed of four groups, which, strictly speaking, are the four great divisions adopted by Humboldt. 1. The *Cor* *dilleras of New Grenada.* 2. The *Andes of Peru.* 3. The *Andes of Chili and Potosi.* 4. The *Patagonian Andes.* The highest points are, el Picacho, in the Sierra Nevada, about 3000 fathoms; the Peak of Tolima, in the chain of Quindiu, 2865 fathoms; Chimborazo, in the Peruvian Andes, 3350 fathoms; the mountain of Descabezado, in the Andes of Chili and Potosi, about 3300; and the Corcovado, in the Patagonian Andes, 1950 fathoms.

D. The Parimian system is composed of several chains, the most important of which is the *Sierra Parima.* The Duida, 1300 fathoms, is the loftiest point.

E. The Brasilian system extends on the eastern coast of America, from the fourth degree of south latitude to the mouth of the Rio de la Plata. Its highest point, 932 fathoms, is the Itamba.

It may, in general be said, that in Europe, Asia, and Africa, the rivers, and other mediterranean waters, says Buffon, extend more from the east to the west than from north to south, which proceeds from the chains of mountains being for the most part so directed; and that, in other respects the whole continent of Europe and Asia is broader in this direction than the other. It is in this direction, too, that all the rivers of America flow, because, excepting the Cordilleras, there are no very extensive chains of mountains, and none whose directions are parallel to them. In the old, as well as the new continent, most of the waters have their greatest extent from west to east, and most of the rivers flow in this direction, which is caused by another reason, *i. e.* that there are many long chains of mountains parallel to each other, whose direction is from east to west, and because the rivers and other streams are obliged to follow the intervals which divide these chains of mountains; consequently, one single chain of mountains, directed from north to south, will produce rivers whose directions will be the same as that of those which issued from many chains of mountains, whose common direction is from east to west; and it is for this particular reason, that the rivers of America have this direction in common with those of Europe, Africa, and Asia.

This sweeping assertion of Buffon is, however, contradicted by the fact. That the rivers of Europe generally, take the course which he mentions, is undoubtedly true. But with respect to the other three quarters of the globe, the exceptions to his rule are numerous and important. In Asia, all the gigantic Siberian rivers flow from the south to the north. On the opposite side of that continent, the Donnai, the Menam, the Indus, and other mighty streams, descend from north to south. In Africa, the Nile directs its waters from the south to the north. In North America, the Mississippi, the most considerable part of the Missouri, and the Mackenzie; and, in South America, the Uruguay, the Parana, and the Araguay, take their course in the direction of the poles.

A remarkable phenomenon has been observed with respect to rivers, and that is, that in the inland parts, and at a distance from the sea, they flow in a direct line, but in proportion as they approach their mouths, they assume more of a winding or serpentine course.* In large rivers there is a considerable eddy along the banks; and the nearer the sea the greater is this eddy. The surface of the water in rivers is by no means level from bank to bank; on the contrary, the middle of the stream is higher or lower than the water of the sides, according to circumstances. When a river swells suddenly by the melting of snow, or any other cause, the middle of the stream is sensibly higher than the sides: in one instance, the elevation is said to have been as great as three feet. On the other hand, when rivers approach their mouths, the water near the sides is commonly more elevated than that in the middle.

The swelling of the Nile, and its inundations, has a long time employed the learned; most of them have looked upon it as marvellous, though one of the most natural things, and what is every year to be seen in every great river throughout the world. It is the rain which falls in Abyssinia and Ethiopia which causes the swelling and inundation of that river, though the north wind must be regarded as the primitive cause. 1st, Because it drives the clouds which convey this rain from the coast of Abyssynia; 2dly, because blowing against the mouths of the Nile, it causes the waters to return against the stream, and thus prevents them from pouring into the sea in too great a quantity: this circumstance may be every year relied on, when the wind being at the north, and suddenly veering to the south, the Nile in one day loses what it gathered in four.

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* The reason of this is, probably, that as most rivers descend from mountains, they are more rapid near the source. On the contrary, when they descend into the plains, their course is known to be less rapid, and they are consequently diverted from a right line by every little obstacle which presents itself. The same reason will account for the different mouths of the Nile, the Ganges &c.—Ed

It has been calculated that the quantity of water which a river, equally rapid with the Po, would convey to the ocean, would be in the proportion of a cubical mile in twenty-six days; and that all the rivers in the globe would, in the space of one hundred and twelve years, supply the sea with 21,372,626 cubical miles of water, which is about equal to its whole contents. Later estimates, however, and more worthy of credit, give only 25,000 cubic miles for the produce of all the rivers of the globe, in which case, supposing the ocean to be two miles in depth, 56,000 years would be required to fill its bed.

Mr. Halley has demonstrated that the vapours which rise from the sea,* and which the winds convey over the earth, are sufficient to form all the rivers, and to supply all the water which falls on the surface of the earth.

When the course of a river is interrupted by a precipice, it frequently forms a cataract or waterfall. The fall of Niagara, in the river St. Lawrence, in Canada, is the most famous in the world. The river, in the part just above the fall, is between six and seven hundred feet broad—the whole of this vast sheet of water is poured down the rocks, from the height of one hundred and fifty-three feet perpendicular. The noise of the fall is heard at several leagues distance; and the dashing produces a mist which reaches to the clouds, and which forms a most beautiful rainbow whenever the sun shines. Both the Rhine and the Nile have their cataracts. The river Vologda, in Russia, has two. The river Zaire, or Congo, in Africa, has a succession of rapids or cataracts. The river Velino, in Italy, has a cataract, artificially formed, of above a hundred and fifty feet perpendicular. At Trolhatta, near Gottenburgh, in Sweden, the river rushes down from a prodigious high precipice into a deep pit, with a terrible noise, and such dreadful force that those trees designed for the masts of ships, which are floated down the river, are usually turned upside down in their fall, and often are shattered to pieces, by being dashed against the surface of the water in the pit; this occurs if the masts fall sideways upon the water; but if they fall endways, they dive so far under water that they disappear for a quarter of an hour, or more: the pit into which they are thus plunged has been often sounded with a line of some hundred fathoms long, but no ground has hitherto been found. There is also a cascade, which descends three hundred and sixty feet, at Powerscourt, in Ireland. M. Buffon supposes this to be the highest in the world. It is, however, far surpassed by that of Tequendama, in South America, which falls nearly six hundred feet, and that of the Staubbach, in Switzerland, which falls nine hundred feet. In the latter instance, the sheet of water is completely broken by the resistance of the air, and the fluid reaches the earth like a shower of rain.

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* It is calculated that from a square foot of water, about one pint is evaporated in twenty-four hours; of this water one part falls back into the sea, and another part is carried off in the form of clouds, these clouds are arrested by the tops of mountains, where they fall in the form of rain, &c. This rain sinks into the earth, and forms springs, rivulets, &c which, uniting, fall from the mountains in large currents.—Ed.

There are rivers which lose themselves in the sands, and others which seem to precipitate into the bowels of the earth: the Guadalquiver, in Spain, the Rhone, the Orbe, and many others, lose themselves in the earth. It is asserted, that in the west part of St. Domingo there is a mountain of a considerable height, at the foot of which are many caverns, or subterraneous rivers, and the rivulets fall with so much noise as to be heard at the distance of seven or eight miles.

In the old continent there are about four hundred and thirty rivers, which fall directly into the OCEAN, or into the Mediterranean and Black Sea, and in the new continent, scarcely one hundred and eighty rivers are known which fall directly into the sea: but in this number only the great rivers are comprehended. All these rivers carry to the sea a large quantity of mineral and saline parts, which they have washed from the different soils through which they have passed. The particles of salt, which are easily dissolved, are conveyed to the sea by the water. Some naturalists, and among the rest Halley, have pretended that the saltness of the sea proceeds only from the salts of the earth, which the rivers transport thither. Others assert, that the saltness of the sea is as ancient as the sea itself, and that this salt was created only that the sea might not corrupt: but it may be well supposed that the sea is preserved from corruption by the agitations of the wind, and the flux and reflux, as much as by the salt it contains;

Next to the Black Sea, the greatest lake in the universe is the Caspian Sea, whose extent in length, from north to south, is about two hundred and fifty leagues, and scarcely more than eighty broad, on an average. This lake receives one of the greatest rivers in the world, i. e. the Volga; also some other considerable rivers, among which are the Yaik, the Yemba, the Daria, and the Asterabad; but what is singular is, that it does not receive any on its eastern side throughout this whole length of nearly three hundred leagues. There are some small islands in the Caspian Sea, and its waters are much less saline than those of the ocean; storms are here very dangerous, and large vessels are not used for navigation therein, as it is shallow, and many banks and shoals are scattered under the surface of the water.

There are lakes which, like pools, do not receive any river, and from which none go out. There are others which do receive rivers, and from which others run; and lastly, some which only receive rivers. The Caspian Sea and the Lake Aral, are of the last species; they receive the waters of many rivers, and contain them. Thus the Dead Sea receives the Jordan, though no river goes from it. In Asia Minor there are small lakes of the same kind. Persia has several; some of which are of great magnitude. The largest is that of Zerah, or Durra, the *Aria Palus*, of the ancients, which has an extent of one thousand one hundred square miles, and receives not only several minor streams, but also the river Helmund, after a course of four hundred miles. The lake of Ourmia, in Adjerbidjan, is two hundred and eighty miles in circumference; and lakes Van, Erivan, and Baktegan, are likewise of considerable size. There are also similar small lakes in Greece and Albania, and there are some of the same kind in both Africa and America. That of Titicaca, in South America, has a circumference of two hundred and forty miles, and a depth of from seventy to eighty fathoms.

The most general and largest lakes, however, are those which having received another river, or many small rivers, give rise to other great rivers. It is worthy of remark that all lakes from which rivers derive their origin, all those which fall into the course of rivers, and which carry their waters thereto, are not saline; and almost all those, on the contrary, which receive rivers, without other rivers issuing from them, are saline. which seems to favour the

The theory of the winds has been so well described by Mr. Maclaren and Mr. Leslie, that we will copy their words, in preference to the vague and far less accurate description which is given by the French naturalist. "The unequal distribution of heat over the surface of the land and water,' says Mr. Maclaren, "necessarily disturbs the equilibrium of the atmosphere, and produces currents of air or winds. These currents, however various, have been supposed to result from two general movements, pervading the whole mass of the atmosphere. The heavy and cold air of the temperate regions having a tendency to displace the warm and rarefied air of the torrid zone, generates a current in each atmosphere toward the equator. To replace the air abstracted from the higher latitudes, an upper and counter current flows back from the equator to the pole; and thus the atmosphere, while it performs a constant revolution, tempers the extremes of climate, by transporting the cold of the frigid zone to the equator, and carrying back the heat of the equator to the frigid zone. These great south and north currents, which are to be considered as the *primary* winds, receive various modifications. The under current, which proceeds from the polar regions, having impressed upon it the slow rotatory motion of those regions, does not acquire in its journey the velocity of the parts it passes over. Instead, therefore, of proceeding along the meridian, it is deflected to the westward. It pursues this lateral course more and more as it approaches the torrid zone, and the impulse south and north being destroyed when the currents from the opposite hemisphere meet at the equator, the motion westward alone remains. This constitutes the well known trade wind, which blows from the east at the equator, from the north-east at the northern tropic, and the south-east at the southern. The upper and counter current again, carrying with it the rapid velocity of the equatorial regions, does not travel right along the meridian, but deviates more and more to the east as it advances; and when its progress toward the pole is stopped by the accumulatien of air from the opposite meridians, the motion eastward remains, and it settles into a west wind. Thus a constant east wind should prevail at the equator, and a constant west wind near the poles; but the latter, being primarily an upper current, may not be invariably felt as a west wind at the surface. It does not follow, however, that the upper and under currents preserve their relative situation over all the temperate zone. From the greater accumulation of air in the higher latitudes, and from variations of temperature produced by local causes, the upper current will often be beat down to the surface, and the lower current ascend. This interchange will take place occasionally at all parts of the temperate zone. Hence, in high latitudes, storms of wind, which mingle the warm upper current with the cold air below, always produce an increase of heat, as Captain Parry found. In the northern hemisphere, then, when the cold current from the pole sweeps the surface rapidly, we have *north* wind; it becomes a *north-east* wind when its motion southward is retarded; an *east* wind when it is checked; and a *south-east* when it is deflected back, by mingling with a current from the south; all of which, except the last, are generally found to be cold winds. When the warm current from the south descends and sweeps the surface, we have a *south* wind if its motion northward is rapid; a *south-west* when its motion northward is retarded; a *west* wind when it is checked; and a *north-west* when it meets and mingles with a current from the north. All these, except the last, are generally warm winds, as experience proves. The line of division between the upper and lower currents should be where the mercury stands at fifteen inches, which is at the height of three miles and a half. This should be the region of clouds, and clouds do generally approach to this elevation.

"The theory, upon the whole, agrees tolerably well with the facts. But the variable surface and temperature of the land greatly affect the course and velocity of the winds. In the torrid zone, within the parallel of twenty-five or thirty degrees on each side of the equator, the trade winds blow constantly from the east. From the superior warmth of the northern hemisphere, the line that separates the opposite trade winds is not the equator, but the second or third parallel north. To a certain extent also, they follow the course of the sun, reaching a little further into the south hemisphere, and contracting their limits in the north when the sun is on the south side of the equator, and making a reverse change when he declines to the north. In a zone of variable breadth, in the middle of this tract, calms and rains prevail, caused, proably, by the mingling and ascending of the opposite aerial currents. High lands change or interrupt the course of the trade winds. Thus, under the lee of the African shore, calms and variable winds prevail near the Cape Verd islands, while an eddy or counter current of air from the south-west is generated on the coast of Guinea. The lofty barrier of the Andes shelters the sea on the Peruvian shores from the trade winds, which are not felt till a ship has sailed eighty leagues to the westward; but the intervening space is occupied by a wind from the south. In the Indian Ocean the trade wind is curiously modified by the lands which surround it on the north-east, and west. The southern trade wind blows regularly from the east and south-east, from ten degrees of south latitude to the tropic, but in the space from ten degrees south latitude to the equator, north-west winds blow during our winter, (from October to April,) and south-west in the other six months; while, in the whole space north of the equator, south-west winds blow during summer, and north-east during winter. The cause of these remarkable winds, which are called monsoons, has not been very satisfactorily ascertained.

"The region of constant winds is confined within the thirtieth parallel on each side of the equator. On the outer side of these limits, calms prevail pretty generally over a narrow space, beyond which the region of variable winds extends to the pole. In the open sea, where the true direction of the winds is best known, navigators have repeatedly observed that throughout this region the prevailing wind is from the west. Mr. Forster observes, that beyond the tropics, the west winds are the most universal. That east winds have an ascendency within the antarctic circle, as he thinks, may be questioned; few observations having been made there, and those few not to be depended on, in consequence of the local influence of the ice. According to the author of Lord Anson's Voyage, 'a westerly wind almost perpetually prevails in the southern parts of the Pacific Ocean,' (he speaks of latitude sixty degrees,) and a similar wind in the northern parts carried the Spanish galeons from Japan to California, along the parallel of thirty-five or forty degrees. West winds prevail in Kamtschatka; they blow three fourths of the year in Hudson's Bay; the west and north-west winds predominate greatly at Melville Island; and it is a familiar fact among mariners, that, by means of these winds, the voyage eastward across the North Atlantic, is generally accomplished in about half the time of the voyage westward. On the west coast of Europe, too, the west and south-west winds are the most general. It is remarked, also, that in our climate, south and south-east winds are the most rare; that winds between north and east are almost invariably cold; those between south and west warm; and those between north and west of a mixed character. So far the facts correspond generally with the theory, though many anomalous circumstances may be found.

"The change of the seasons, which affects the local temperature so much, necessarily influences the atmospheric currents. Accordingly, the most violent tempests are about the equinoxes, and in every country there are prevailing winds peculiar to certain seasons. It may be suspected that most of the winds observed on land, or in confined seas, are mere local eddies, or reflex currents, produced by the irregularities of the surface. Thus, while the south-west wind prevails almost one half of the year at Dover, London, and in the west of England generally, it is scarcely felt at Liverpool, which lies in the gorge of a valley, where the western chain of hills is interrupted; and on the other hand, the south-east, so uncommon in the rest of England, is the predominating wind here. In the long basin of the Red Sea, the wind blows in no direction but right up and down. In Lancaster Sound, Captain Parry found the wind to blow always either east or west. For ten months of the year a wind (which is probably a smaller branch of the north trade wind) blows constantly up the valleys of the Mississippi and Ohio, preserving a breadth in the latter of twelve or fifteen miles. In the list of *Vents Dominans* for the interior of Europe, collected by Cotte, nothing like a system can be discovered; nothing but local currents, running in every possible direction, according to the position of mountains and valleys. Winds, indeed, even when strong, are often confined to a space surprisingly small. In the temperate, but still more in the frigid zone, two or three winds are seen blowing from, or to, different points within a few leagues; nay, of two ships within sight of one another, one is sometimes becalmed, while the other is seen struggling with a storm. In the northern seas, even strong gales, when they have carried a ship into frozen water, invariably desert her, or give place to a wind which blows from the ice. The effect can only be attributed to the comparative coldness of the ice, and warmth of the water, generating a local descending current over the one, and an ascending current over the other.

" The Mediterranean has a system of winds peculiar to itself, which we have not room to explain. All warm countries, where sandy deserts abound, give birth to pernicious hot winds. Such is the Simoom, or hot wind of the desert, and the Sirocco, so well known in the East, and along the shores of the Mediterranean."

With respect to the trade wind and monsoons, Mr. Leslie observes, that, " our northern hemisphere presenting to the action of the solar beams a larger surface of land than the southern, is, on the whole, rather warmer. Hence the parallel of greatest heat runs not exactly through the equator, but about three degrees farther north. This circle is therefore strictly the mean path of the aggregate easterly streams of air.

" But though the hottest part within the torrid zone, taking the average of a whole year, occupies the parallel of three degrees north latitude, it must, to a certain extent, shift its position with the seasons. In the summer months, the sun shines twice vertical upon the tropic of Cancer, and consequently raises the temperature of the northern half of the zone. During winter again, this effect is transferred to the southern half of the torrid region. In the progress of summer, therefore, the trade wind gradually bends about a point to the north; but as winter advances, it declines as much to the south.

" Such is the character of that general wind which encircles the globe, flowing with slight deviation constantly from the east, and spreading over a zone of more than fifty degrees in breadth. It sweeps the Atlantic Ocean from the coast of Africa to Brazil, and the Pacific from Panama to the Philippine Isles and New Holland, and again the Indian Seas partially from Sumatra to Zanguebar.

" The trade wind undergoes an essential modification, however, where the continent stretches into the torrid zone. The sun acting more powerfully upon the land than upon the surface of the sea, the accumulated warmth is much greater, and shifts with the revolution of the seasons on either side of the equator. The centre of heat approaches in summer to the northern and in winter to the southern tropic. Instead of the great eastern stream, those regions have two opposite periodic winds alternating toward the north and the south, and called the *monsoons*. When these winds advance to the equator, they conjoin an apparent easterly velocity; but when they recede from the equator, they carry their excess of velocity from the west. A diagonal motion results from the combined tendencies. In the Arabian and Indian seas, on the north side of the equator, the monsoon blows north-west during the summer months, from April to October; and in the opposite direction, or south-east, during the winter. But on the south side of the equator, near Java and Sumatra, the course of the monsoon is north-east in summer, and south-west in winter."

The land and sea breezes, which fan the coasts and islands of hot climates, have been well described by Dampier, one of the most observant and intelligent of voyagers. "These sea breezes," says he, "do commonly rise in the morning about nine o'clock, sometimes sooner, sometimes later. They first approach the shore so gently, as if they were afraid to come near it, and ofttimes they make some faint breathings, and as if not willing to offend, they make a halt, and seem ready to retire. I have waited many a time both ashore to receive the pleasure, and at sea to take the benefit of it.

"It comes in a fine, small, black curl upon the water, when as all the sea between it and the shore not yet reached by it is as smooth and even as glass in comparison, in half an hour's time after it has reached the shore, it fans pretty briskly, and so increaseth gradually till twelve o'clock, then it is commonly strongest, and lasts so till two or three a very brisk gale; about twelve at noon it also veers out to sea two or three points, or more, in very fair weather. After three o'clock it begins to die away again, and gradually withdraws its force till all is spent, and about five o'clock, sooner or later, according as the weather is, it is lulled asleep, and comes no more till the next morning.

"These winds are as constantly expected as the day in their proper latitudes, and seldom fail but in the wet season. On all coasts of the main, whether in the East or West Indies, or Guinea, they rise in the morning, and withdraw toward the evening; yet capes and headlands have the greatest benefit of them, where they are highest, rise earlier, and blow later.

"Land breezes are as remarkable as any winds that I have yet treated of; they are quite contrary to the sea breezes; for those blow right from the share, but the sea breeze right in upon the shore; and as the sea breezes do blow in the day and rest in the night, so, on the contrary, these do blow in the night and rest in the day, and so they do alternately succeed each other. For when the sea breezes have performed their offices of the day, by breathing on their respective coasts, they in the evening do either withdraw from the coast, or lie down to rest. Then the land winds, whose office is to breathe in the night, moved by the same order of Divine impulse, do rouse out of their private recesses, and gently fan the air till the next morning; and then their task ends, and they leave the stage.

"There can be no proper time set when they do begin in the evening, or when they retire in the morning, for they do not keep to an hour; but they commonly spring up between six and twelve in the evening, and last till six, eight, or ten in the morning. They both come and go away again earlier or later, according to the weather, or some accidental cause from the land: for on some coasts they do rise earlier, blow fresher, and remain later, than on other coasts, as I shall show hereafter.

"These winds blow off to sea, a greater or less distance, according as the coast lies more or less exposed to the sea winds: for in some places we find them brisk three or four leagues off shore; in other places not so many miles, and in some places they scarce peep without the rocks, or if they do sometimes in very fair weather make a sally out a mile or two, they are not lasting, but suddenly vanish away, though yet there are every night as fresh land winds ashore at those places as in any other part of the world.

"Indeed, these winds are an extraordinary blessing to those that use the sea in any part of the world within the tropics; for as the constant trade winds do blow, there could be no sailing in these seas; but by the help of the sea and land breezes, ships will sail two or three hundred leagues, as particularly from Jamaica to the Lagune of Trist, in the Bay of Campeachy, and then back again, all against the trade wind.

"The seamen that sail in sloops or other small vessels in the West Indies, do know very well when they shall meet a brisk land wind by the fogs that hang over the and before night; for it is a certain sign of a good land wind to see a thick fog lie still and quiet, like smoke over the land, not stirring any way; and we look out for such signs when we are plying to windward. For if we see no fog over the land, the land wind will be but faint and short that night. These signs are to be observed chiefly in fair weather, for in the wet season fogs do hang over the land all the day, and it may be neither land wind nor sea breeze stirring. If in the afternoon also, in fair weather, we see a tornado over the land, it commonly sends us forth a fresh land wind.

"These land winds are very cold, and though the sea breezes are always much stronger, yet these are colder by far. The sea breezes, indeed, are very comfortable and refreshing; for the hottest time in all the day is about nine, ten, or eleven o'clock in the morning, in the interval between both breezes: for then it is commonly calm, and then people pant for breath, especially if it is late before the sea breeze comes, but afterwards the breeze allays the heat. However, in the evening again, after the sea breeze is spent, it is very hot till the land wind springs up, which is sometimes not till twelve o'clock, or after."

This phenomenon is thus accounted for by Mr. Leslie. "In open seas, and especially near the equator, the thermometer scarcely varies a degree, and seldom two degrees, by Fahrenheit's scale, in the whole course of a day. But on the land the change of temperature between the night and day, in similar situations, will rise often higher than seventy-six centesimal degrees, or one hundred and twenty-six of Fahrenheit. If we therefore conceive a stratum of air two thousand feet in altitude, heated only to the mean difference, or three centesimal degrees, it would receive an expansion of twenty-four feet; whence the velocity of the wind produced would be thirty-nine feet every second, or at the rate of twenty-six miles in the hour. This is a very moderate estimate; but the celerity of the current must, no doubt, be diminished from the retardation which it suffers in proportion to the length of track over which it has to sweep.

"During the night the lower atmosphere is colder on land than at sea, owing partly to the descent of the more elevated and colder portions of air which chill the surface of the ground, and partly to those cold pulses which are incessantly darted from every point of the azure sky. It we reckon the reduced temperature of the land only a centesimal degree and a half below the standard of the adjacent ocean, this would give twelve feet for the contraction of the vertical column of air, and, consequently a stream would flow toward the sea with a celerity of twenty-eight feet per second, or very nearly twenty miles every hour. In general, the land breeze may be considered not so powerful as that which blows from the sea."

The winds (says Buffon, to whom we now return) are more violent in mountainous places than in plains; and the higher we ascend, the more the power of the wind increases, until we reach the common height of the clouds; that is, to about one quarter or one third of a league perpendicular: beyond that height, the sky is generally serene, especially in summer, and the wind is said to be even imperceptible on the tops of high mountains.

A current of air, like a current of water, increases in velocity, where the space of its passage is straitened; the wind which is scarcely perceptible in a wide and open plain becomes violent in passing through a narrow passage between two mountains, or simply between two lofty buildings; and the point of the most violent action of the wind is above these structures or mountain straits. The air, being compressed by the resistance of these obstacles, has a greater mass of density, and the same velocity subsisting, the effort or gust of wind becomes much stronger; this is the cause that near a church, or a castle, the winds seem to be much stronger than they are at a certain distance from these edifices. It has been often remarked, that the wind being reflected by an insolated building does not prevent it from being more violent than a direct wind, which produced this reflected wind; for this we are able to discern no other reason than the above: the impelled air compresses against the building, and is reflected, not only with its former velocity, but also with a greater body, which, in fact, renders its action much more violent. Particular winds, whether direct or reflected, are more violent than those which are general. A uniformly continued stream of air produces not such havoc as the fury of those winds which blow in sudden gusts.

The Cape of Good Hope is famous for its tempests, and the singular cloud which produces them: this cloud appears at first only like a small round spot in the sky, called by the sailors *the Ox's Eye*, and which probably ap pears so minute from its exceeding great height. In Natolia a small cloud forms like the Ox's Eye at the Cape of Good Hope, and from this cloud issues a terrible wind which produces similar effects.* In the sea between Africa and America, especially under the equator and in the neighbouring parts of it, these kinds of tempests very often arise: near the coast of Guinea sometimes three or four of these storms are formed in a day; they are caused and announced, like those of the Cape, by small black clouds: the rest of the sky is generally very serene, and the sea calm. The first blast which proceeds from these clouds is furious, and would sink ships in open sea, if they did not take the precaution to furl the sails. It is principally in the months of April, May, and June, that these tempests are experienced on the Guinea sea.

All these tempests are produced by winds which proceed from a cloud, and their direction is either to the north or south, north-east or south-west, &c.; but there are others called HURRICANES, which are still more violent than these, and in which the winds seem to proceed from all the coasts; they have a whirling motion which nothing can resist. A calm generally precedes these horrible tempests, and the sea then appears like a piece of glass; but in an instant the fury of the winds raises waves as high as the clouds. There are parts where we cannot land, because alternately there are always calms and hurricanes of this kind: the Spaniards have, therefore, called these places *calms* and *tornados*.

The following table shows the velocities of the different winds, from one mile in an hour, when the motion is scarcely perceptible, to one hundred miles, which is the speed of the destructive hurricane.

Miles per hour.	Feet per second.	
1	1.47	
2	2.93	Light airs.
3	4.40	

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* The cause of the wind which succeeds the appearance of the cloud seems to be the rarefaction of the air caused by the discharge of electrical matter from the cloud. In the hot climates these black clouds are known to be highly charged with electricity, and the electric fire, being in this respect analogous to other fire or heat, produces an immediate rarefaction of the air. This rarefaction produces a kind of vacuum, and the cold dense air rushing in, a tempest naturally ensues. EDITOR.

4	5.87	Breeze.
5	7.33	
10	14.67	Brisk gale.
15	22.00	
20	29.34	Fresh gale.
25	36.67	
30	44.01	Strong gale.
35	51.34	
40	58.68	Hard gale.
45	66.01	
50	73.35	Storm.
60	88.02	
80	117.36	Hurricanes tearing up trees, overturning buildings, and almost every other obstacle.
100	146.70	

When from a sudden rarefaction, or any other cause, contrary currents of air meet in the same spot, a WHIRLWIND is produced. Dr. Franklin gives an account of the formation and progress of one of these meteors, which he witnessed in Maryland, while travelling with his son. "In a valley below us," says he, "we saw a small whirlwind, which began in the road, and which drew attention by the dust that it raised and contained. It appeared like a sugarloaf, lengthened at the point, which ascended to us along the hill, increasing in size as it advanced. When it passed near us, its smaller end, which was next the ground did not appear bigger than a common barrel; but it grew so large toward the summit, that at the height of forty or fifty feet it seemed to be twenty or thirty feet in diameter The rest of the company stopped to look at it; but, as my curiosity was stronger than theirs, I followed it closely and observed that, on its passage, it licked up, if I may use the expression, all the dust which was beneath its lower end. As it is a popular opinion that a shot fired at a waterspout will make it burst, I endeavoured to break this small whirlwind by striking it repeated blows with my whip, but to no purpose. In a short time it quitted the road, and entered the wood, where it every moment became larger and stronger, carrying away, instead of dust. the dry leaves with which the ground was thickly strewed, and making a great noise between those leaves and the branches of trees, bending and turning large trees circularly with astonishing force. Though the progressive resistible impulse of the aerial torrent. At the same time the meteor discharged a shower of hailstones, several inches in diameter, which broke to pieces heavily laden wagons, and destroyed every vestige of the harvest. A still more terrific visitation of this kind was experienced in August, 1826, in the department of the Aude. About noon, the clouds began to gather in the west, a violent wind arose, and a black and thick cloud appeared suspended over a spot called the Red Field. On the side of Fombraise, the clouds were seen to rush against each other, and to descend very low, as if they were attracted by the earth. The thunder echoed from all parts; a dead rolling sound was heard; and all the domestic animals fled to shelter. All at once a frightful cracking was heard in the west; the air, violently agitated, was drawn with extreme rapidity toward the opaque cloud which covered the Red Field. The moment of their junction was marked by a loud explosion, and the appearance of a column of fire, which, sweeping along the field, rooted up every thing in its course. A young man, who was unfortunate enough to be in the path of the meteor, was whirled into the air, and fractured his skull by falling on a rock. Fourteen sheep were also snatched up, and fell suffocated. The column of air and fire then proceeded to the castle of Laconette, threw down the west wall of the park, made two excavations, removed enormous rocks, rooted up the largest trees, and penetrated into the castle in two places, where it committed the most terrible devastation After having thus ravaged a considerable extent of country, it finally disappeared, leaving the ground deeply furrowed, and the air strongly impregnated with a sulphureous odour.

The same effect that is produced by two contending currents of air takes place in another element, and gulfs or whirlpools are no other than the eddies of the water formed by the action of two or more opposite currents. The greatest known gulf is that of the Norway sea, called Maalstroem, or Moskostroem, which is affirmed to be upward of twenty leagues in circuit. It absorbs for six hours all that is near it, water, ships, &c. and afterward returns them in the same space of time as it drew them in.

A Waterspout is no other than a whirlwind at sea The vacuum which is caused by the meeting currents increased considerably: but the last which was formed scarcely remained longer than that which we saw on the north side. The second, on the south side, remained about a quarter of an hour, but the first on that side remained a little longer, and this it was which terrified us the most. At first its canal was as thick as my finger, afterward as thick as my arm, then as my leg, and at last as the trunk of a large tree, which a man might compass with his arms. We distinctly perceived water through this transparent body, which ascended in a serpentine manner. Sometimes it diminished a little in size, sometimes at top, and sometimes at bottom; then it resembled exactly a soft tube, with some fluid matter pressed with the fingers, either upward to make this liquor descend, or at bottom, to cause it to ascend. After this it diminished so much that it was thinner than my arm; afterward it returned as thick as my thigh, and then again became very thin; at last, I saw that the water elevated on the surface of the sea began to lower, and the end of the canal which touched it divided and grew narrower, when a variation of the light removed it from our view."

CHAPTER IV.

Of Volcanoes—Earthquakes—the Formation of new Islands—Caves and Grottoes—Bogs and Fens—Mutations of Land into Sea, &c.

The burning mountains, called Volcanoes, include in their bowels sulphur, bitumen, and other matters which serve as aliment to a subterraneous fire, the effect of which is far more violent than that of gunpowder, or even thunder. A volcano is a cannon of immense volume, the orifice of which is often more than half a league in circumference: this mouth vomits forth torrents of smoke, flames, rivers of bitumen, sulphur, and melted metal, clouds of cinders and stones, and sometimes it ejects enormous rocks to many leagues distance, which human powers united could not move; the combustion is so terrible, and the quantity of burnt and melted matters which the mountain throws out is so plentiful, that they enter cities, forests, cover the fields a hundred and two hundred feet in thickness, and form sometimes hills and mountains the crater a liquid and burning matter, similar to metal when in fusion. This fills the whole of the crater, and reaches to the very edges of the opening. An abundant quantity of dross floats on its surface, which alternately appears and vanishes, as the liquid mass rises or falls in the crater where it seems to boil. This scene, of so majestic a character, is but the prelude to real disasters. The liquid matter overflows, runs down the sides of the volcano, and descends to its base. There it sometimes stops, and appears like a very fiery serpent recoiling upon itself. More frequently it dilates itself, and gushes out from beneath a kind of solid crust which is formed upon its surface: it advances like a large and impetuous river, destroys whatever it meets with in its course, flows over those obstacles which it cannot overturn, passes along the ramparts of the shaken cities, invades a space of country of several leagues in extent, and in a moment transforms flourishing fields into a burning flame. Equal ravages may be sustained, though the liquid matter, called *lava*, does not issue exactly from the top of the volcano: it is sometimes too compact and weighty to be elevated to the summit; its violent efforts then occasion new ruptures in the side of the mountain, through which rushes forth the igneous torrent."

In Europe are four famous volcanoes, Mount Etna in Sicily, Mount Hecla in Iceland, Mount Vesuvius in Italy, near Naples, and Stromboli, one of the Lipari islands, on the Italian coast. Mount Etna has burnt from time immemorial; its eruptions are very violent, and the matters it throws out are so plentiful, that they may be dug to the depth of sixty-eight feet, where we meet with marble pavement, and the vestiges of an ancient town which has been covered and buried under the thickness of matter thrown out from the mountains, in the same manner as the city of Herculaneum has been covered by the matter thrown out from Vesuvius. New mouths of fire were formed in 1650, 1669, and at other times; we see the flame and smoke of this volcano from Malta, which is about sixty leagues distance from it. In 1537, there was an eruption of this volcano, which caused an earthquake in Sicily for twelve days, and which overthrew a very great number of houses and structures: it ceased only by the opening of a new mouth, which burnt every thing for five miles in the environs of the mountain. The cinders thrown out by the volcano were so abundant, and ejected with so much force, that they were driven as far as Italy; and vessels which were departed to some distance from Sicily, were incommoded by them. Fazelli describes the conflagrations of this mountain circumstantially, and says the foot of it is one hundred leagues in circumference.

This volcano has now two principal mouths, the one narrower than the other; these two vents always smoke, but fire is never seen to issue from them, except during the time of eruptions: it is affirmed that stones are found which the volcano has thrown out to the distance of sixty thousand feet.*

One of the most violent eruptions of Mount Vesuvius was in the year 1737. The mountain vomited, by several mouths, large torrents of burning metallic matters, which dispersed themselves over the country and into the sea. Mons. Montesquieu, who communicated this relation to the Academy of Sciences, observed with horror one of these rivers of fire, and saw its course for six or seven miles till it reached the sea; its breadth was sixty or seventy feet, its depth twenty-five or thirty palms, and in certain bottoms or valleys, two hundred and twenty; the matter which flowed was like the scum which issues from the furnace of a forge. Since then, several eruptions of great violence, have occurred particularly in 1767, 1794, and 1810. Next to those of the years 79 and 1631, that of 1794 was the most destructive. It flowed over five thousand acres of vineyards and cultivated lands, and destroyed the town of Torre del Greco. During this eruption, the summit of the mountain fell in.

Stromboli, which rises to an altitude of three thousand feet, is remarkable for being in a state of incessant activity, yet never throwing out those torrents of lava which descend from other volcanoes. Its perpetual flames have acquired for it the name of the light-house of the Mediterranean. The mountain is bifurcated, and the crater is situated at some distance from the summits. Spallanzani visited it in 1788, and has accurately described the phenomena which he witnessed. After having attentively examined the crater from one of the summits, he approached the crater, where he found that the explosions succeeded each other so rapidly, that they might almost be said to occur without any intervals of quiet; but they varied in their force, the matter in some instances not rising more than fifty feet, and falling again into the crater, and in others it was elevated half a mile; the sounds, consequently, are proportionably loud, or the reverse, and resemble a hissing noise; the fragments of lava were actually fluid during their progress, which was evident from their globular shape, and, becoming hard before they fell upon the sides of the mountain, that form is preserved.

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* See an interesting description of this celebrated mountain in an elegant and entertaining production, entitled "The present State of Sicily and Malta."

The exhalations exhibited a thick cloud several miles in extent, and were strongly impregnated with sulphur; this cloud was impenetrable by the beams of the sun, and appeared very black in the midst, but white on the edges, and was, in all probability, a mile in depth. The vapour thus floating from the mountain was derived from three distinct sources, though doubtlessly produced by the same cause in the first instance: when an ejection of lava took place, it was always accompanied by a cloud of gray smoke from the crater; to the west of that spot were a number of obscure apertures, each of which sent forth a volume of similar vapour; and to the east, a vast cavern emitted a column at least twelve feet in diameter, extremely black and dense.

"Not satisfied with the observations I had already made," observes Spallanzani, "my curiosity impelled me to attempt farther discoveries. From the pointed rock on which I stood, I could only see the edges of the inside of the crater; I considered, therefore, whether it might not be possible to obtain a sight of the lower parts likewise; and, looking round me, I perceived a small cavern hollowed in the rock, very near the gulf of the volcano, into which the rock above prevented the entrance of any burning stones, should they be thrown so far. It was likewise so elevated, that from it the crater was open to my view. I therefore hastened to take my station in this cavity, taking advantage of one of the very short intervals between the eruptions. To my great satisfaction, my expectations were completely fulfilled; I could here look down into the very bowels of the volcano, and truth and nature stood as it were unveiled before me."

The crater he found to be of a circular form, with edges composed of a chaos of sand, scoriæ, and lava; and he are no visible marks of its having overflowed so as to descend like those of Etna and Vesuvius.

Though the ejections of the larger and heavier stones have short intermissions, those of the lesser and lighter have scarcely any. Did not the eye perceive how these showers of stones originate, it would be supposed that they fell from the sky: the noise of the more violent eruptions resembling that of thunder, and the darkness occasioned by the mounting cloud of smoke, presenting the image of a tempest.

While the naturalist was employed in intense observation, the eruption suddenly ceased, the lava sunk to a greater depth than usual, and remained thus depressed; the fierce light subsided, and, at the same instant, the various streams of smoke, issuing before silently from the apertures west of the crater, began to rush forth with a loud hissing noise, and the apertures to shine with a bright colour of fire. " I know nothing," says Spallanzani, " to which the sound produced by the issuing of these fumes can be more properly compared than the blowing of large bellows into a furnace, by which metals are melted; such as I have seen at Zalatna, in Transylvania, and Schemnitz and Kremnitz, in Hungary; except that those volcanic bellows roared a hundred times louder, and almost deafened the ear."

Violent as are the eruptions of Etna and Vesuvius, they are far surpassed by those of the volcanoes of Iceland. Hecla, which has an elevation of above five thousand feet. is the most famous of the Icelandic burning mountains; but there are many other volcanoes which more than rival it in the same island. Not above one third of the eruptions which have taken place in Iceland have been from Hecla. One of the most tremendous of these visitations occurred in 1783, and in the province of Skapterfial. The flames were seen to the distance of two hundred and forty miles, and the lava covered a space, ninety miles long and forty-two broad, to the depth of from sixteen to twenty fathoms, and dried up twelve rivers, some of them of considerable magnitude.

" A vast chain of ignivomous mountains," says Malte Brun, " stretches around the great ocean. Terra del Fuego, Chili, Peru, all the chain of the Andes, are full of volcanoes. We distinguish in Peru, those of Arequipa and of Pichinca, and that of Cotopaxi, whose flames, in

1738, rose higher than two thousand feet, and whose explosion was heard at the distance of one hundred and twenty leagues, if we may give credit to the Spaniards. Chimborazo, one of the highest mountains of the globe, is an extinguished volcano, and there are a great many others. Humboldt has seen the smoke of Antisani rise eighteen thousand feet. If we pass the isthmus of Panama, we find the volcanoes of Nicaragua and of Guatimala. Their number is infinite: there are some which are covered with perpetual snow, and which consequently are elevated to a great height. Then come those of Mexico, properly so called; namely, Oribaza, Popocateipetl, sixteen thousand six hundred and twenty-six feet high; Jorullo, which first broke out in 1759; and several others all situated under the nineteenth parallel of latitude. California contains five volcanoes, that are now burning. There can be no doubt, according to the accounts of Cook, La Perouse, and Malaspina, that there is a number of very considerable volcanoes on the north-west of America. Mount Saint Elias is nearly sixteen thousand eight hundred feet in height. These volcanoes form the intermediate link between those of Mexico and those in the Aleutian islands and the peninsula of Alaschka. These last, which are very numerous, both extinct and burning, serve to continue the chain toward Kamtschatka, where there are three of great violence. Japan has eighty; and the island of Formosa has several. The volcanic belt now becomes immensely wide, and embraces the Philippine islands, the Marian or Ladrones, the Moluccas, Java, Sumatra, the isles of Queen Charlotte, the New Hebrides, and, in short, all that vast Archipelago which forms the fifth part of the globe.

"The other volcanic chains are far from being of so great extent. There is perhaps one in the Indian Sea. The islands of Saint Paul and Amsterdam, the formidable volcano in the isle of Bourbon, and the jets of hot water in the island of Madagascar, are the only known links of this chain.

"The middle of the Atlantic Ocean conceals another volcanic focus, of which the Azores and Canary islands have felt the effects. The Peak of Teneriffe, which is eleven thousand four hundred feet in height, is the most elevated volcano in the old world. It is very probable that Lisbon has, in its vicinity, a submarine volcano.

"The Antilles probably contain a whole system of volcanoes, parts of which are recognised in Jamaica, Guadaloupe, and Grenada."

Among the volcanoes existing in the Indian Archipelago, one of the most formidable is that of Mount Tanbora, in the island of Sumbawa. In April, 1815, there was an eruption of it, which destroyed several thousand persons, and desolated such a wide extent of territory that multitudes were compelled to emigrate to obtain subsistence. The mountain also threw out incessant showers of dust, which, in the middle of day, produced midnight darkness over an extent of several degrees.

But, perhaps, the most tremendous proof on record of the power of volcanic fire, is the eruption which gave birth to the volcano of Jurillo, in New Spain. The spot where this phenomenon occurred was one of the most extensive and rich estates in the country. "In the month of June, 1759, says Humboldt, "a subterraneous noise was heard. Hollow noises of a most alarming nature were accompanied by frequent earthquakes, which succeeded one another for from fifty to sixty days, to the great dismay of the inhabitants of the plantation. From the beginning of September, however, every thing seemed to announce the complete re-establishment of tranquillity, when, in the night of the 28th, the horrible subterraneous noise recommenced. The affrighted Indians fled to the mountains of Aguasarco. A tract of ground from three to four miles in extent, which goes by the name of *Malpays*, rose up in the shape of a bladder. The bounds of this convulsion are still distinguishable in the fractured strata. The Malpays, near its edges, is only thirty-nine feet above the old level of the plain called the *Playas de Jurullo;* but the convexity of the ground thus thrown up, increases progressively toward the centre, to an elevation of five hundred and twenty-four feet.

"Those who witnessed this great catastrophe from the top of Aguasarco, assert that flames were seen to issue forth for an extent of more than half a square league, that fragments of burning rocks were thrown up to prodigious heights, and that, through a thick cloud of ashes, illumined by the volcanic fire, the softened surface of the earth was seen to swell up like an agitated sea. The rivers of Cuitamba and San Pedro precipitated themselves into the burning chasms The decompositio of the water contri-

buted to invigorate the flames, which were distinguishable at the city of Pascuaro, though situated on a very extensive table land, four thousand five hundred and ninety-two feet elevated above the plains of Jorullo. Eruptions of mud, and especially of strata of clay, enveloping balls of decomposed basaltes in concentrical layers, appear to indicate that subterraneous water had no small share in producing this revolution. Thousands of small cones, from six feet to nine feet in height, called by the natives *ovens*, issued forth from the *Malpays*. Although within the last fifteen years, according to the testimony of the Indians, the heat of these volcanic ovens has suffered a great diminution, I have seen the thermometer rise to two hundred and two degrees of Fahrenheit, on being plunged into fissures which exhale an aqueous vapour. Each small cone is a *fumorola*, whence a thick vapour ascends to the height of from thirty to fifty feet. In many of them a subterraneous noise is heard, which appears to announce the proximity of a fluid in ebullition.

" In the midst of the ovens, six large masses, elevated from one thousand three hundred and twelve to one thousand six hundred and forty feet each, above the old level of the plains, sprang up from a chasm, of which the direction is from the north-north-east to the south-south-east. This is the phenomenon of the Monte Novo of Naples, several times repeated in a range of volcanic hills. The most elevated of these enormous masses, which bears some resemblance to the *puys* of Auvergne, is the great volcano of Jorullo. It is continually burning, and has thrown up from the north side an immense quantity of scorified and basaltic lavas, containing fragments of primitive rocks. These great eruptions of the central volcano continued till the month of February, 1760. In the following years, they became gradually less frequent. The Indians, frightened at the horrible noises of the great volcano, abandoned at first all the villages situated within seven or eight leagues distance of the plains of Jorullo. They became gradually, however, accustomed to this terrible spectacle; and having returned to their cottages, they advanced toward the mountains of Aguasarco and Santa Iñes, to admire the streams of fire discharged from an infinity of great and small volcanic apertures. The roofs of the houses of Queretaro were then covered with ashes, at the distance of more than forty-eight leagues in a straight line from the scene of the explosion. Although the subterraneous fire now appears far from violent, and the Malpays and the great volcano begin to be covered with vegetables, we nevertheless found the ambient air heated to such a degree, by the action of the small ovens, that the thermometer, at a great distance from the surface, and in the shade, rose as high as one hundred and nine degrees of Fahrenheit. This fact appears to prove that there is no exaggeration in the accounts of several old Indians, who affirm, that for many years after the first eruption, the plains of Jurillo, even at a great distance from the scene of the explosion, were uninhabitable, from the excessive heat which prevailed in them."

Numerous as are the volcanoes which are still in action, they are, perhaps, outnumbered by those which have long been extinct. Italy, Dalmatia, Germany, and many other countries, contain many of the latter class. The southern provinces of France, particularly Auvergne, are full of extinguished volcanoes.

Humboldt is of opinion, that the influence of subterraneous fire, though bounded within comparatively narrow limits on the surface, extends, in the bowels of the earth, to immense spaces. In proof of this, he states that, on the day when the volcano of St. Vincent's, in the West Indies, broke out again, the sound of the explosions was conveyed under ground as far as the confluence of the rivers Nula and Apuré, a distance of nearly six hundred and fifty miles in a straight line, and was so loud as to resemble frequent discharges of the largest cannon.

The matters which volcanoes throw out, generally come forth in the form of a torrent of melted minerals, which inundates all the environs of these mountains; these rivers of flaming melted matters extend even to considerable distances, and by cooling, form horizontal or inclined strata, which for position are like the strata formed by the sediment left by the waters; but it is very easy to distinguish the strata produced from matters thrown out by volcanoes, from those which have the sediment of the sea for their origin. 1. because these strata are not throughout of an equal thickness: 2. Because they contain only matters which are evidently perceived to have been calcined, vitrified, or melted, and because they do not extend to any great distance. When coal mines are opened, which are generally met with in argillaceous earth (clay,) at a great

When any new mouths are formed in Mount Vesuvius, there are earthquakes at Naples and in the neighbourhood of the volcano: but these earthquakes have never shaken the Alps, and are not communicated to France or to other countries remote from the source of the phenomenon.

But there is another kind of earthquake, very different in its effects, and perhaps in its causes; there are earthquakes which are felt at great distances, and which shake a long course of ground, without any new volcano or eruption appearing.

To understand rightly what may be the causes of this kind of earthquake, it must be remembered, that all inflammable matters capable of explosion, produce, like gunpowder, by inflammation, a great quantity of air and vapour; that this air produced by fire is in a state of very great rarefaction. Let us therefore suppose, that at a very considerable depth, as at or about one or two hundred fathoms, pyrites, and other sulphurous matters are to be met with; and, that, by the fermentation produced by the filtration of the water, or other causes, they inflame; and let us see what must happen: at first, these matters are not disposed regularly by horizontal strata, as the more ancient matters are, which have been formed by the sediment of the waters; on the contrary, they are formed in perpendicular strata, in caverns at the foot of these clefts, and in other parts where the water can act and penetrate. These matters inflaming, will produce a great quantity of air or vapour, the spring of which compressed in a small space, like that of a cavern, will not shake the earth immediately above, but will search for passages in order to make its escape; it will therefore naturally force its way through those parts where it meets least obstruction, and will therefore proceed through the interstices between the different strata, or through any channel or caverns which may afford it a passage. This subterraneous air or vapour will therefore produce in its passage a noise and motion, proportioned to its force and to the resistance it meets with; and these effects will continue till it finds a vent, perhaps in the sea, or till it has diminished its force by being greatly expanded. This explanation corresponds entirely with all the phenomena which are observed respecting earthquakes. They proceed with a wave-like motion, and are felt at different places, not at the same

GROUND SQUIRREL. P. 80.

instant, but at different times, in proportion to the distance.

We can only confirm what has been advanced, by connecting it with two other circumstances. It is well known that mines exhale vapours, independent of the wind produced by the current of the water; we often see currents of unhealthy air and suffocating vapours; it is also known that there are holes, abysses, and deep lakes in the earth, which produce winds, like the lake Boleslaw, in Bohemia, &c.

From history we have innumerable instances of the dreadful and various effects of these terrible phenomena. Pliny, in his first book, chap. lxxxiv. relates, that in the reign of Tiberius, an earthquake happened, which overthrew twelve cities in Asia; and in his second book he says, that by a great earthquake there were one hundred towns overthrown in Libya. In the time of Trajan, the city of Antioch, and a great part of the adjacent country, were swallowed up by an earthquake; and, in the time of Justinian, in 528, this town was a second time destroyed by a similar cause, with upward of forty thousand of its inhabitants: and, sixty years after, in the time of Saint Gregory, it felt the effects of a third earthquake, with the loss of sixty thousand persons. In the time of Saladin, in 1182, most of the towns of Syria and Jerusalem were destroyed by the same cause. In Calabria and Pola, there have been more earthquakes than in any other part of Europe. In the time of Pope Pius XI. all the churches and palaces of Naples were overthrown, and above thirty thousand of its inhabitants killed; and all those which remained alive were obliged to live in tents, till they had rebuilt their houses. In 1629, there were earthquakes in Pola, which destroyed seven thousand persons; and in 1638, the town of St. Euphemia was swallowed up; and there remains only a stinking lake in its place. Ragusa and Smyrna were also almost destroyed. There was an earthquake in 1692, which extended into England, Holland, Flanders, Germany, and France; it was chiefly felt on the sea coasts and rivers, and extended to a space of at least two thousand six hundred leagues square. On the 16th of June, 1628, there was so terrible an earthquake in the island of St. Michael, that the sea near it opened, and, in one place, where it was more than one hundred and fifty fathoms deep, threw up an island more than a league and a half long, and upward of sixty fathoms high.

Another earthquake happened in 1691, which began the 16th of July, and lasted in the island of St. Michael till the 12th of the following month. Tercera and Fayal were agitated the next morning with so much violence, that they appeared to move; but these frightful shocks returned only four times; whereas, at St. Michael's, they did not cease a moment for fifteen hours. The islanders having quitted their houses, which they saw fall before their eyes, passed all that time exposed to the injuries of the weather. A whole town, named Villa Franca, was overthrown to its very foundation, and most of the inhabitants buried under its ruins. In many parts, the plains rose into hills; and in others, some mountains flattened or changed situation. A spring of water issued from the earth, which flowed for four hours, and which appeared dry all on a sudden. The air and sea, still more agitated, resounded with a noise which might have been taken for the roaring of a number of wild beasts. Many persons died with the fright, the ships in the ports suffered dangerous shocks, and those which were at anchor or under sail, at twenty leagues distance from the islands, suffered considerable damage.

In the year 1646, the mountain of the island of Machian split with terrible reports, by an earthquake, an accident which is very common in that country: so many fires issued through this opening, that they consumed many negro yards, with the inhabitants, and all that was in them. In the year 1685, this prodigious crack was to be seen, and still is apparent; it is called the path of Machian, because it descends from the bottom like a road hollowed out, but which at a distance appears like a path.

Of modern earthquakes, the most tremendous are those of 1755, 1783, 1797, 1812, and 1822. The earthquake of 1755, which took place on the 1st of November, destroyed the city of Lisbon. It came on at thirty-five minutes past nine, without the slightest warning, except a rumbling noise, resembling artificial thunder in a theatre, and, by short but quick vibrations, shook the foundations of all the city, so that many buildings instantly fell. With a scarcely perceptible pause, the nature of the motion then changed, and the houses were tossed from side to side, with a motion like that of a wagon violently driven over rough stones. The second shock laid almost the whole city in ruins, with prodigious slaughter of the people. The half past nine in the evening of the 13th of August, 1822. Aleppo, Antioch, Idleb, Riha, Gisser Shogr, Darcoush, Armenas: every village and every detached cottage in this pashalic, and some towns in the adjoining ones (says the British consul) were, in ten or twelve seconds, entirely ruined, and are become heaps of stones and rubbish, in which, at the lowest computation, twenty thousand human beings, about a tenth of the population, were destroyed, and an equal number maimed or wounded. The extreme points where this terrible phenomenon was violent enough to destroy the edifices, seem to be Diarbekir and Markab, (twelve leagues south of Latachia,) Aleppo and Scanderoon, Killis and Khan Shekoon. All within those points have suffered so nearly equally, that it is impossible to fix on a central point. The shock was sensibly felt at Damascus, Adeno, and Cyprus. The shock was felt at sea so violently within two leagues of Cyprus, that it was thought the ship had grounded. Flashes of volcanic fire were perceived at various times throughout the night, resembling the light of the full moon. Edifices on the summits of the highest mountains were not safer than buildings situated on the banks of the rivers, or on the beach of the sea.

Nor has Great Britain been entirely free from this kind of convulsion. Very slight shocks have occasionally been felt in the southern part of the island, and others, somewhat more violent, in the northern part. A shock which was felt at Inverness, in Scotland, in 1815, produced the extraordinary effect of turning round a steeple, without doing it any further damage.

We have seen, in the preceding paragraphs, that there are earthquakes which are felt for some distance at sea. Mr Shaw also relates, that, in 1721, being on board the Gazelle, an Algerine vessel, mounting fifty guns, three violent shocks were felt one after the other, as if every time a weight of twenty or thirty tons had been thrown on the ship. This happened in a part of the Mediterranean which was two hundred fathoms deep.

In countries subject to earthquakes, it happens, when a new volcano is formed, earthquakes cease, and are only felt in the violent eruptions of the volcano, as is observed in the island of St. Christopher.

NEW ISLANDS are produced, either suddenly by the operation of subterraneous fires, or slowly by the acc lated sediments of water. Seneca informs us, that, i time, the island Therasia suddenly emerged from the and Pliny relates, that thirteen islands arose all at from the bottom of the Mediterranean. Upon this sul , however, we have some facts more recent, and less in ved in obscurity.

The 23d of May, 1707, at the sun's rising, near same island of Therasia, or Santorin, something was like a floating rock in the s , som curious went near it, and fo nd this hich had issued from the bottom of the sea, to increase under their feet; and they brought with them the pumice stone and oysters, which the rock still had attached to its surface. There was a slight earthquake at Santorin, two days before the growth of this shoal. This new island increased considerably till the 14th of June, without any accident, and was then half a mile round, and from twenty to thirty feet high; the earth was white, and bordered a little on argillaceous; but after that, the sea was troubled more and more: vapours arose, which infected the island of Santorin; and, the 16th, 17th, and 18th of July, several rocks were seen to issue at once from the bottom of the sea; all of which united and formed like one rock. All this was done with a dismal noise, which continued upward of two months, with flames which arose from the new island; it still kept increasing in circumference and height; and the explosions always threw out rocks and stones more than seven miles distance.

The 10th of October, 1720, near the island of Terceira, a very considerable fire arose out of the sea. Some mariners having approached it by orders of the governor, perceived, the 19th of the same month, an island which appeared to be covered with fire and smoke, and a prodigious quantity of cinders thrown to a distance, as from a volcano, and accompanied with a noise similar to that of thunder. A similar occurrence took place, on the 30th of January, 1811, near the island of St. Michael, when an eruption threw up an island a mile in diameter. The name of Sabrina was given to it, and formal possession was taken of it, but it soon disappeared beneath the waves.

On the whole, however, the islands produced by the action of fire and earthquakes, are but few, and these events occur seldom; but there are an infinite number of new islands produced by the mud, sand, and earth, which the rivers or the sea carry and transport into different places. At the mouth of all rivers, masses of earth and banks of sand are formed, whose extent often becomes considerable enough to form islands of a moderate size. In this manner a very considerable island has, within these few years, been formed in the lower part of the Ganges. The sea retiring from certain coasts, leaves the most elevated parts naked, which form so many new islands; and so likewise, by extending itself on certain shores, it covers the lowest parts, and leaves the highest, which it could not surmount, apparent above the surface of the water, which form so many more islands: in consequence of which, it is remarked, that there are very few islands in the middle of the sea, and that they are almost all in the neighbourhood of the continents, where the sea formed them, either by retreating from, or approaching toward, different countries. Numerous islands are also formed in the Australasian ocean by the incessant labours of the coral insects.

Water and fire, the natures of which are so different, and even so contrary, produce similar effects, or at least, those which appear to us as such. Water has produced mountains, and formed most islands. There are likewise caverns, clefts, holes, gulfs, &c., some of which owe their origin to subterranean fires, and others to water.

"From what I have seen in the mountains of Europe and the Cordilleras of America, (says Humboldt,) caverns may be divided, according to their interior structure, into three classes. Some have the form of large clefts, or crevices, like veins not filled with ore; such as the cavern of Rosenmuller in Franconia, Elden hole in Derbyshire, and the *sumideros* (sewers) of Chamacasapa near Tasca and Tehuilotepec in Mexico. Other caverns are open to the light at both ends; these are rocks really pierced through natural galleries, traversing a solitary mountain; such as the Hole-berg of Muggendorf, and the famous cavern of Danto in Mexico. A third form, and the most common, exhibits a succession of cavities placed nearly on the same level, in the same direction, and communicating with each other by passages of greater or less breadth."

Of the caverns produced by fire, Iceland yields numerous examples. Some of them are of great extent, and are made use of by the inhabitants for sheltering their cattle. The largest in the island is five thousand and thirty-four feet long, from fifty to fifty-four broad, and between thirty-four and thirty-six feet high. The magnificent basaltic cave of Fingal, in the island of Staffa, is also, in all probability a volcanic production.

Scarcely any part of the globe is without caverns. North and South America have them on a gigantic scale. The cavern of Caripe, in Colombia, is two thousand eight hundred feet in length. In Europe there are caverns, in Great Britain, France, Germany, the Austrian dominions, Greece, and other countries. Those of Adelsberg, in Carniola, are said to afford a subterranean walk of two leagues. Those of Derbyshire, two of which have already been noticed, are of considerable magnitude.

One of the most beautiful of these caves is that of Corycia, near Parnassus, in Greece. Mr. Raikes, by whom it was visited, thus describes it: "I had been so repeatedly disappointed with scenes of this kind—they had so generally appeared inferior to the descriptions given of them, that I expected to meet with the same reverse here, and to find nothing but a dark, narrow vault. I was, however, to be for once agreeably surprised. The narrow and low entrance of the cave spread at once into a chamber three hundred and thirty feet long, by nearly two hundred wide. The stalactites from the top hung in the most graceful forms, the whole length of the roof, and fell, like drapery, down the sides. The depth of the folds was so vast, and the masses thus suspended in the air were so great, that the relief and fulness of these natural hangings, were as complete as the fancy could have wished. They were not, like concretions or incrustations, mere coverings of the rock; they were the gradual growth of ages, disposed in the most simple and majestic forms, and so rich and large, as to accord with the size and loftiness of the cavern. The stalagmites below and on the sides of the chamber, were still more fantastic in their forms, than the pendents above, and struck the eye with a fancied resemblance of vast human figures.

"At the end of this great vault, a narrow passage leads down a wet slope of rock. With some difficulty, from the slippery nature of the ground on which I trod, I went a considerable way on, until I came to a place where the descent grew very steep; and my light being nearly exhausted, it seemed best to return. On my back, I found, half buried in the clay, on one side of the passage, a small antique *patera*, of the common black and red ware. The incrustation of the grotto had begun to appear; but it was unbroken, and I was interested in finding this simple relic of the homage once paid to the Corycian nymphs by the ancient inhabitants of the country. The stalagmitic formations on the entrance of this second passage are wild as imagination can conceive, and of the most brilliant whiteness.

"It would not require a fancy as lively as that of the ancient Greeks, to assign this beautiful grotto as a residence to the nymphs. The stilness which reigns through it, broken only by the gentle sound of the water which drops from the points of the stalactites (the ὑδατ' ἀεναοντα of the grotto of the Nymphs in the Odyssey,) the dim light admitted by its narrow entrance, and reflected by the white ribs of the roof, with all the miraculous decorations of the interior, would impress the most insensible with feelings of awe, and lead him to attribute the influence of the scene to the presence of some supernatural being. An inscription, which still remains on a mass of rock near the entrance, marks that the cavern has been dedicated to Pan and the Nymphs."

One of the most celebrated caverns, though not superior to many others, is that of Antiparos, an ample description of which has been given us by M. de Tournefort. It is computed to be three hundred fathoms deep from the surface of the earth; but the grotto appears to be forty fathoms high by fifty broad; it is filled with large beautiful stalactites, or sparry pillars like icicles, of various forms, as well on the roof of the vault as at the bottom.

In mountainous countries, great ravages are often occasioned by the falling or sliding down of immense portions of the impending rocks. In 1618, the town of Pleurs, and the village of Schilano, about a league from Chiavenna, were buried in an instant beneath the ruins of a part of Mount Conto. Three persons, who chanced to be absent from their homes, were the only individuals who escaped. All the rest of the inhabitants, two thousand four hundred and thirty in number, perished. Of the works of man not a vestige remained visible, except a country house, and a cellar which was formed in the rock.

In the month of June, 1714, a part of the mountain of Diablerets in the Valais, fell suddenly, between two and three o'clock in the afternoon, when the sky was very feet, it rushed with the sound of thunder on the mass of ice below. At the instant when the snow and ice struck the inferior mass of the glacier, the pastor of the village, the sacristan, and some other persons, observed a light which almost instantly disappeared, and left every thing enveloped in the darkest night. A frightful hurricane, occasioned by the pressure of the air, immediately succeeded, and in an instant produced the most tremendous devastation. The precipitated masses of ice did not reach the valley, but the hurricane occasioned by their fall was so violent, that it carried substances several fathoms up the mountains; tore up by the roots the largest larch trees at great distances; projected blocks of ice of some cubic feet beyond the village to the distance of half a league; bore away the spire of the steeple; levelled several houses with the ground; and carried the carpentry of many edifices more than a quarter of a league beyond the village, into the forest which lies above it. Happily, only two lives were lost.

When the waters on the surface of the earth cannot find vent to flow, they form MORASSES and BOGS. The most famous morasses in Europe are, those of Muscovy at the source of the Tanais; those of Finland, where the great morasses of Savolax and Enasak are; there are also some in Holland, Westphalia, and many other low countries; in Asia, the morasses of the Euphrates, those of Tartary, and the Palus Meotidis; nevertheless, in general, there are fewer of them in Asia and Africa than in Europe; but America may be said to be but one continued morass, throughout all its plains. This great number of morasses is a proof of the modern date of the country, and of the small number of inhabitants, and still more of their want of industry.

A circumstance related by Dr. Plot will serve to give an idea of the quantity of earth which the rain detaches from the mountains, and carries along with it into the valleys: in his Natural History of Staffordshire, he says, that eighteen feet deep in the earth, a great number of pieces of money coined in the reign of Edward V. have been found; i. e. two hundred years before his time; so that this ground, which is boggy, has increased above a foot in eleven years, or an inch and a twelfth every year. We may still make a similar observation on trees buried at seventeen feet depth, below which medals of Julius Cæsar have been found; so that the earth brought from the tops of mountains into plains by running waters, serves very considerably to increase the elevation of the ground of plains.

It is evident, that considerable changes have taken place on the surface of the globe not only by the action of fire, but by water also. The sea, from various circumstances, has repeatedly changed its bed. Authors have suspected, that the island of Great Britain was formerly united to the continent of France. On the coasts of France, England, Holland, and Germany, the sea has retreated in many parts. In Italy, a considerable tract of territory has been gained by the retreating of the ocean; and Ravenna, which was formerly a seaport of the Exarchate, is no longer a maritime town.

In the city of Modena, and four miles round, whatever part is dug, when we reach the depth of sixty-three feet, and bore five feet deeper with an auger, the water springs out with such force, that the well is filled in a very short space of time. This water flows continually, and neither diminishes nor increases by the rain or drought. What is remarkable in this ground is, that when we reach the depth of fourteen feet, we find pavements, and other ruins of an ancient town, as boards, houses, different pieces of mosaic work, &c. after which we find a very solid ground, which is thought to have never been stirred; yet below it there is a moist earth mixed with vegetables; and at twenty-six feet are entire trees, as nut-trees, with nuts on them, and a great quantity of branches and leaves of trees;* at twenty-eight feet depth, we meet with a friable chalk, mixed with many shells; and this bed is eleven feet in thickness; after which, we again meet with vegetables, and so on alternately chalk and earth mixed with vegetables, to the depth of sixty-three feet; at which depth is a bed of sand mixed with some gravel and shells, like those formed on the coasts of the Italian sea. These successive beds of fenny or marshy earth and chalk are always met with in the same order, wherever we dig; and very often the auger meets with large trunks of trees, which it bores through, and which occasions great trouble to the workmen; bones, coals, flint, and pieces of iron are also found. Ramazzini, who relates these circumstances, thinks that the gulf of Venice formerly extended as far as, and even beyond Modena; and that, by course of time, and perhaps by the inundations of the sea, this ground has been formed.

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* A submarine forest exists on the coast of Lincolnshire and Yorkshire. Ed.

CHAPTER V.

Of the Nature of Man—Of infancy—Manhood—Extent of Human Life—Of the Senses—Anecdotes illustrative of this Subject.

MAN is a being compounded of two distinct natures, body and soul. The soul exists independently of the senses, but receives all its information by their means. The leper whose skin is dried up, has no sense of external feeling: and a man deaf from infancy, has no idea of sounds. But to give a more perfect idea of the nature of man, it will be proper to pursue him through the different stages of his existence.

At his birth, the INFANT is exposed to a new element, the air. What the sensations are on the admission of this element into the lungs, it is impossible to guess; but, from the cries of the infant, we may conjecture that it is attended with pain. The eyes of an infant are indeed open, but they are dull, and appear to be unfitted for the performance of any office whatever; and the outward coat of them is wrinkled. The same reasoning will apply to most of the other senses. It is not till after forty days that it begins to smile; nor is it till then that it begins to weep: its former sensations of pain are unaccompanied with tears. The size of an infant born at the full time, is twenty-one inches, though some do not exceed fourteen: and it generally weighs twelve, and sometimes fourteen pounds. The form of the body and members of a new-born infant are by no means perfect. At the end of three days, there usually appears a kind of jaundice: and, at that time, there is generally milk in the breast of the infant, which is squeezed out with the fingers. The skull of infants is not completely formed: in the language of the nursery, the head is OPEN in a particular part; that is, the skull bones have not yet grown far enough to meet. In this opening, a palpitation may sometimes be discovered: and the beating of the arteries may always be felt. Above this opening, a species of scurf appears, which is rubbed off with a brush. Formerly, infants, as soo born, were injudiciously and unnaturally laced with dages; so that they were not able to move a single jo Nations which we call barbarous act more rationally more humanely in this respect. The Siamese, the Indians, the Japanese, the Negroes, the Savages of America, lay their infants naked in hanging beds of cotton, or in cradles lined with fur.

Infants sleep much, but their sleep is often interrupted. They ought to have the breast every two hours in the day, and in the night as often as they awake. It is of great importance to keep children clean and dry from their excrements. The American Indians, who cannot change their furs as frequently as we can our cloths, put under them the dust of rotten wood, and renew it as often as it becomes damp. Great evils ensue from the negligence of nurses. Infants are frequently left to cry for a considerable time, which often occasions diseases, or, at least, throws them into a state of lassitude, which deranges their constitutions. To palliate this, they are sometimes put into a cradle and rocked to sleep, which may occasionally derange the stomach and head. Before children are put into the cradle, we ought to be certain that they want nothing, and when they are rocked, it ought never to be with such violence as to stun or stupefy them.

The eyes of children are always directed toward the light, and if only one eye be directed to it, the other will probably become weak; both eyes ought, therefore, to be equally shaded, or equally exposed. Squinting is commonly the effect of injudicious treatment in this respect. For the first two or three months the diet of the infant ought to be chiefly confined to its mother's milk.

The eight incisores, or fore-teeth, appear first. They are produced generally by pairs, and from two months old to ten or twelve. The four canini (or dog-teeth,) appear commonly about the ninth or tenth month. About the close of the first, or in the course of the second year, sixteen other teeth appear, called *molares*, or grinders. In the fifth, sixth, or seventh year the fore-teeth, the dog-teeth, and the first six of the grinders, naturally shed, and a new set appears. At the age of puberty, or later, the *dentes sapientiæ*, or wise teeth, appear. Women are said to have fewer teeth than men.

The hair of most infants is exceedingly light, almost white. When a child is suffered to cry violently, and too long, it is in danger of a rupture, but the early application of bandages or trusses will frequently remove the complaint.

The frame of infants is said (perhaps erroneously) to be less sensible of cold than during any other season of life. The pulse is certainly strong, and it is therefore fair to conclude that the internal heat is considerable. Till the age of three years the life of infants is extremely precarious:[*] in the course of the ensuing second and third years it becomes more certain, and at six or seven a child has a greater probability of living than at any other period of life. It is remarked that of a certain number of children born at the same time, above a fourth die in the first year, above a third in two years, and at least one half in three years. By other calculations, it appears that one half of the children born at the same time, are not extinct in less than seven or eight years.[†]

At twelve or fifteen months infants begin to lisp. A is the vowel which they pronounce with most ease. Of the consonants, B, M, P, T, are most easy. In every language, therefore, *Baba*, *Mama*, *Papa*, are the first words that children learn. Some children pronounce distinctly in two years, though the generality do not speak for two years and a half, and frequently not so early.

Some young persons cease growing at fourteen or fifteen, while others continue their growth to twenty-two or twenty-three. In men the body attains its perfect proportion at the age of thirty, and in women sooner. The persons indeed of women are generally complete at twenty The distance between the eyes is less in man than in any other animal; in some creatures, in fact, the eyes are at so great a distance, that it is impossible they should ever view the same object with both eyes at once. Men and apes are the only animals that have eyelashes on the lower eyelid. Other animals have them on the upper, but want them on the lower lid. The upper lid rises and falls the lower has scarcely any motion.

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[*] It is rendered still more so by injudicious treatment. Vegetable diet and frequent purges murder innumerable poor infants. As the animal frame is in a state of debility at this period of life, strengthening animal food is certainly most proper; and, as the intestines are generally inclined to a state of relaxation, frequent purges are certain to be destructive

[†] Since the period when Buffon wrote, the probability of life, in infancy, has much increased, in consequence of the introduction of vaccination, and the more rational manner in which children are managed
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The ancients erroneously considered the hair as a ind of excrement, and believed that, like the nails, it incre ed by the lower part putting out the extremity; but the derns have discovered that every hair is a tube, which and receives nutriment like the other parts of the b The roots, they observe, do not turn gray sooner than the extremities, but the whole changes colour at once. Instances have been known of persons who have grown gray in one night.

There is no part of the body which has been subject to such changes of fashion as the hair and the beard. Some people, and among others the Turks, cut the hair off their heads, and let their beards grow. The Europeans, on the contrary, shave their beards, and wear their hair. The negroes shave their heads in figures at one time, in stars at another, in the manner of friars; and still more commonly in alternate stripes; and their little boys are shaved in the same manner. The Talapoins, of Siam, shave the heads and the eyebrows of such children as are committed to their care. Every nation seems to have entertained different prejudices, at different times, in favour of one part or another of the beard.

The neck supports the head, and unites it to the body. This part is much more considerable in the generality of quadrupeds than in man. But fishes, and other animals that have not lungs similar to ours, have no neck whatever. Birds, in general, have the neck longer than any other kind of animal: those of them which have short claws, have also short necks; those, on the contrary, that have them long, are found to have the neck in proportion.

The human breast is outwardly formed in a very different manner from that of other animals. It is larger in proportion to the size of the body; and none but man, and such animals as make use of their fore feet as hands, such as monkeys, bats, and squirrels, are found to have those bones called clavicles, or, as we usually term them, collar bones. The breasts in women are larger than in men; however, they seem formed in the same manner; and, sometimes, milk is found in the breasts of men, as well as in those of women. Birds, and all other oviparous* animals, have no teats; but viviparous† fishes as the whale and the dolphin, have both teats and milk.

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* Those which breed from eggs.

† Those which produce their young alive, and without eggs

There is little known exactly with regard to the proportion of the human figure; and the beauty of the best statues is better conceived by observation than by measurement. Some who have studied after the ancient masters divide the body into ten times the length of the face, and others into eight. They tell us, that there is a similitude of proportion in different parts of the body: thus, that the hand is the length of the face; that the thumb is the length of the nose; that the space between the eyes is the breadth of the eye; that the breadth of the thickest part of the thigh is double that of the thickest part of the leg, and treble the smallest; that the arms extended are as long as the figure is high; that the legs and thighs are the length of the figure.

The strength of man is very considerable when matured by practice. We are assured, that the porters of Constantinople carry burthens of not less weight than nine hundred pounds; and Mr. Desaguliers tells us of a man in an upright posture, who by distributing a certain number of weights, in such a manner that every part of his body bore its share, was able to support a weight of two thousand pounds.

The strength of a man may be still farther estimated by the continuance of his labour, and by the agility of his motions. Men, who are exercised in running, outstrip horses, or at least continue their speed for a greater length of time. In a journey, also, a man will walk down a horse; and after they have proceeded together for several days, the horse will be quite tired, and the man will be as fresh as at the beginning. The royal messengers of Ispahan, who are runners by profession, go thirty-six leagues in fourteen or fifteen hours. Travellers assure us, that the Hottentots outrun lions in the chase; and that the savages who hunt the elk pursue with such speed this animal, which is as fleet as a stag, that they at last tire it down, and take it. The civilized man is ignorant of his own strength, nor is he sensible how much he loses of it by effeminacy, and how he might add to it by the habit of vigorous exercise.

Lest our description of man should be found imperfect, it will be proper to examine the human countenance, as it appears among ourselves, when agitated by the PASSIONS. In affliction in excessive joy, in love, in shame, in comsobriety, to lengthen out the period of LIFE for a few years. But even of this there seems to be an uncertainty. Men no doubt there are who have surpassed the usual period of human existence: and, not to mention Parr, who lived to the age of one hundred and fifty-two, and Jenkins to that of one hundred and sixty-nine, as recorded in the Philosophical Transactions, we have many instances of the prolongation of life to one hundred and ten, and even to one hundred and twenty years. Yet this longevity was occasioned by no peculiar art or management. On the contrary, it appears, that the generality of such long livers were peasants accustomed to the greatest fatigues, huntsmen, or labourers; men, in fact, who had employed their whole bodily strength, and even abused it, if to abuse it is possible, otherwise than by continual idleness and debauchery.

If in the duration of life there is any difference to be found, it ought seemingly to be ascribed to the quality of the air. In elevated situations, it has been observed, there are commonly found more old people than in such as are low. The mountains of Scotland and Wales, of Auvergne and Switzerland, have furnished more instances of extreme longevity than the plains of Holland or Flanders, of Germany or Poland. In general, however, the period of human existence may be said to be the same in every country. If not cut off by accidental diseases, man is found to live to the years of ninety or a hundred. Beyond that date our ancestors did not live; nor has it in any degree varied since the time of David.

From a careful inspection of the registers of burials in a certain number of country parishes in France, compared with the mortality of Paris, the following table has been made out of the probable duration of human life.

By this Table it appears, that it is reasonably to be expected, or, in other words, that we may lay an even wager, that an infant newly born will live eight years; that an infant of one year will live thirty-three years longer; that an infant of two years will live thirty-eight years longer; that a man of twenty will live thirty-three years and five months longer; that a man of thirty will live twenty-eight years longer; and so proportionally of every other age.*

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* This table must be considered only as an approximation to the truth; the data upon which it is founded being imperfect. EDITOR.

IDEAS of external things are conveyed to the soul of man by means of the five SENSES, *seeing*, *hearing*, *feeling*, *tasting*, and *smelling*. The organs by which the senses act are the nerves, which are small threadlike fibres distributed all over the body, and all of them connected with the brain.

The eyes seem to be formed very early in the human embryo. In the chicken also, of all the parts that are double, these are the soonest produced; and it is observed, from the eggs of several sorts of birds, as well as from those of lizards, that the eyes are much larger and more early in their expansion than any other parts of the twofold growth. Though in viviparous animals, and particularly in man, they are, at first, by no means so large in proportion as in the oviparous classes, yet they obtain their due formation sooner than any other parts of the body. Thus it is also with the organ of hearing. The little bones that help to compose the internal parts of the ear, are entirely formed before any of the other bones, however large they may afterward become, have acquired any part of their growth or solidity. Hence it is evident, that the parts of the body which are furnished with the greatest quantity of nerves are those which appear the soonest, and which are the soonest brought to perfection.

Mr. Cheselden, having couched for a cataract a boy of thirteen years of age, who had been blind from his birth, and having thus communicated to him the sense of seeing, was at great pains to mark the progress of his visual powers. This youth, though hitherto incapable of seeing, was not, however, absolutely and entirely blind. Like every other person, whose vision is obstructed by a cataract, he could distinguish day from night, and even black from white, or either of them from the vivid colour of scarlet. Of the form of bodies, however, he saw nothing, nor of colours themselves, unless the light was strong. At first, the operation was performed only upon one of his eyes; and when he saw for the first time, so far was he from forming the smallest conception of distances, that he supposed (as he himself expressed it) every thing he saw touched his eyes, in the same manner as every thing he felt touched his skin. The objects that pleased him most were those of which the surfaces were plane, and the figures regular; though as yet he could in no degree judge of their different forms, or assign a reason why some were more agreeable to him than others. The ideas he had entertained of colours, during his former dark state, were so imperfect that when he saw them in reality, he could hardly be persuaded they were the same. When such objects were shown him as he had been formerly familiar with, by the touch, he observed them with earnestness, in order to distinguish them a second time. As of these, however, he had too many to retain all at once, the greatest number were forgotten; and for one thing which he knew, after seeing it, there were a thousand things, according to his own declaration, of which he no longer possessed the smallest remembrance. He was very much surprised to find that those persons, and those things which he had loved best, were not the most pleasing to the eye; nor could he help testifying his disappointment in finding his parents less handsome than he had conceived them to be. Before he could distinguish that a picture resembled a solid body, about two months elapsed. Till then, he only considered it as a surface diversified by a variety of colours: but, when he began to perceive that these shadings actually represented human beings, he also began to examine, by the touch, whether they had not the usual qualities of such bodies; and great was his surprise to find smooth and even, what he had supposed a very unequal surface. He was then shown a miniature portrait of his father, which was contained in his mother's watchcase; and though he readily perceived the resemblance, yet he expressed his amazement, how so large a face could be comprised in so small a compass. To him it appeared as strange as that a pint vessel should contain a bushel. At first, he could bear but a very small quantity of light, and he saw every object much greater than life; but in proportion as he observed objects that were in reality large, so in proportion he conceived the others to be diminished Beyond the limits of what he saw, he had no conception of any thing. He knew that the apartment he occupied was only a part of the house; and yet he could not imagine how the latter should appear larger than the former. Before the operation, he formed no great expectations of the pleasures he should receive from the new sense he was promised. That he might be enabled to read and write was his grand object. He said, among other things that he could enjoy no greater delight from walking in the garden with this sense, than without it; because there he already walked at his ease, and was acquainted with all the walks. With great truth he also remarked, that his blindness gave him one advantage over the rest of mankind, an advantage which indeed he preserved for a long time after he had obtained the sense of seeing; namely, that of being able to walk in the night with confidence and security. No sooner, however, had he begun to enjoy this new sense, than he was transported beyond measure; and he declared, that every new object was a new source of delight to him; that his pleasure was so great he had not language to express it. About a year after, he was carried to Epsom, where there is a very beautiful and a very extensive prospect; with this he seemed greatly charmed; and the landscape before him he called a new method of seeing. He was couched in the other eye, a year after the former, and of both operations the success was equally great. When he saw with both eyes, every object appeared to him twice as large as when he saw but with one eye, though he did not see double, or at least he showed no marks from which any such conclusion might be drawn.

A still more interesting case of this kind has recently occurred, and is recorded in the Philosophical Transactions. The subject of it was a lady who was born blind, and who recovered her sight after she had entered on her forty-seventh year. When about six months old, she was placed under a Parisian oculist, who performed an operation on both eyes, with a view to afford her sight. The operation proved unsuccessful; the right eye was attacked with inflammation and completely destroyed, and in the left the vision was not restored. The lady continued in this situation till after she had reached her forty-sixth year, when she applied to Mr. Wardrop. This gentleman found the right eyeball collapsed, but the left possessing its natural globular form, with a transparent cornea, but obliterated pupil. The lady could distinguish a very dark from a very light room, but was not able in the latter case to perceive the situation of the window from which the light came. From this circumstance Mr Wardrop conceived that the retina was in a fit state for receiving the impressions of light, if the obstruction to its admission into the eye was removed. On the 26th of January, 1826. he operated upon this lady, after which she could perceive more light, although she was unable to distinguish either forms or colours. A second operation was performed with but little effect. A third, however, on the 17th of February, was completely successful. She returned home in a carriage from the house in which the operation was effected, with her eye covered only with a loose piece of silk. The first thing she noticed was a hackney coach passing, when she exclaimed, "What is that large thing that has passed by us?" In the course of the evening she requested her brother to show her his watch, concerning which she expressed much curiosity, and she looked at it a considerable time, holding it close to her eye. She was asked what she saw, and she said there was a dark and bright side; she pointed to the hour of twelve, and smiled. Her brother asked her if she saw any thing more, she replied, "Yes," and pointed to the hour of six, and to the hands of the watch. She then looked at the chain and seals, and observed that one of the seals was bright, which was the case, being a solid piece of rock crystal. The next day Mr. Wardrop asked her to look again at the watch, which she refused to do, saying the light was offensive to her eye, and that she felt very stupid: meaning that she was much confused by the visible world, thus, for the first time, opened to her. On the third day she observed the doors on the opposite side of the street, and asked if they were red, but they were in fact of an oak colour. In the evening she looked at her brother's face, and said that she saw his nose; he asked her to touch it, which she did; he then slipped a handkerchief over his face, and asked her to look again, when she playfully pulled it off, and asked "What is that?"

On the sixth day, she told us that she saw better than on any preceding day; "but I cannot tell what I do see; I am quite stupid." She seemed indeed bewildered from not being able to combine the knowledge acquired by the senses of touch and sight, and felt disappointed in not having the power of distinguishing at once by her eye, objects which she could so readily distinguish from one another by feeling them.

On the seventh day, she took notice of the mistress of the house in which she lodged, and observed that she was tall. She asked what the colour of her gown was; to which she was answered that it was blue. "So is that thing on your head," she then observed, which was the case· and your handkerchief, that is a different colour·"

which was also correct. She added, "see you pretty well, I think." The teacups and saucers underwent an examination. "What are they like?" her brother asked her. "I don't know," she replied; "they look very queer to me; but I can tell you what they are in a minute if I touch them." She distinguished an orange on the chimneypiece, but could form no notion of what it was till she touched it. She seemed now to have become more cheerful, and entertained greater expectation of comfort from her admission into the visible world; and she was very sanguine that she would find her newly acquired faculty of more use to her when she returned home, where every thing was familiar to her.

On the eighth day, she asked her brother, when at dinner, what he was helping himself to; and when she was told it was a glass of port wine, she replied, "Port wine is dark, and looks to me very ugly." She observed, when candles were brought into the room, her brother's face in the mirror, as well as that of a lady who was present; she also walked, for the first time without assistance, from a chair to a sofa which was on the opposite side of the room, and back again to the chair. When at tea she took notice of the tray, observed the shining of the japan work, and asked, "What the colour was round the edge?" She was told it was yellow; upon which she remarked, "I shall know that again."

Eighteen days after the last operation had been performed, Mr. Wardrop attempted to ascertain by a few experiments her precise notions of colour, size, forms, positions, motions, and distances of external objects. As she could only see with one eye, nothing could be ascertained respecting the question of double vision. She evidently saw the difference of colours; that is, she received and was sensible of different impressions from different colours. When pieces of paper, one and a half inch square, differently coloured, were presented to her, she not only distinguished them at once from one another, but gave a decided preference to some colours, liking yellow most, and then pale pink. It may be here mentioned, that when desirous of examining an object, she had considerable difficulty in directing her eye to it, and finding out its position, moving her hand as well as her eye in various directions, as a person when blindfolded or in the dark gropes with his hands for what he wishes to touch. She also distinguish ed a large from a small object, when they were both held up before her for comparison. She said she saw different forms in various objects which were shown to her. On asking what she meant by different forms, such as long, round, and square, and desiring her to draw with her finger those forms on her other hand, and then presenting to her eye the respective forms, she pointed to them exactly; she not only distinguished small from large, but knew what was meant by above and below; to prove which, a figure, drawn in ink, was placed before her eye, having one end broad, and the other narrow, and she saw the positions as they really were, and not inverted. She could also perceive motions; for when a glass of water was placed on the table before her, on approaching her hand near it, it was moved quickly to a greater distance, upon which she immediately said, "You move it; you take it away."

She seemed to have the greatest difficulty in finding out the distance of any object; for when an object was held close to her eye, she would search for it by stretching her hand far beyond its position, while on other occasions she groped close to her own face for a thing far removed from her.

She learned with facility the names of the different colours, and two days after the coloured papers had been shown to her, on coming into a room, the colour of which was crimson, she observed that it was red. She also observed some pictures hanging on the red wall of the room where she was sitting, distinguishing several small figures in them, but not knowing what they represented, and admiring the gilt frames. On the same day she walked round the pond in St. James' Square, and was pleased with the glistening of the sun's rays on the water, as well as with the blue sky and green shrubs, the colours of which she named correctly.

It may be observed, that she had yet acquired by the use of her sight but very little knowledge of any forms, and was unable to apply the information gained by this new sense, and to compare it with what she had been accustomed to acquire by her sense of touch. When, therefore, the experiment was made of giving her a silver pencil case and a large key, to examine with her hands, she discriminated and knew each distinctly; but when they were placed on the table, side by side, though she distinguished each with her eye, yet she could not tell which was the pencil case and which was the key.

From this period till the time of her leaving London, on the 31st of March, being forty-two days after the operation, she had acquired a pretty accurate notion of colours, their different shades and names. Her knowledge of distance and of forms was very incomplete, and there was considerable difficulty in directing the eye to an object. She, however, entertained the hope, that when she got home, her knowledge of external things would be more accurate and intelligible, and that when she came to look at those objects which had so long been familiar to her touch, the confusion which the multiplicity of external objects now caused would in a great measure subside.

There is no other case on record of the sight being restored at such an advanced age; in the celebrated instance recorded by Cheselden, and quoted by Buffon, the boy received his sight at the age of fourteen. In that case, also, the boy could distinguish, before the operation, black, white, and scarlet, and when in a good light, he had that degree of sight which generally continues in an eye affected with cataract; whereas, in the lady whose case is here given, the pupil being completely closed, no light could reach to the retina, except such rays as could pass through the substance of the iris.

We judge of distance only by experience, otherwise, when experience does not set us right, the more distant an object is, the smaller it appears. When, from particular circumstances, we cannot form a just idea of distance, and when we cannot judge of objects but by the angle, or rather the image, which they form in our eyes, we are then necessarily deceived as to the size of such objects. Every man has experienced how liable we are in travelling by night to mistake a bush which is at hand for a tree which is at a distance, or indeed a tree which is at a distance for a bush which is at hand. In the same manner, if we do not distinguish objects by their form, and if thereby we cannot judge of distance, the same fallacy will still remain: in this case, a fly which is passing rapidly close before our eyes, will appear to be a bird at a considerable distance; and a horse which may be in the middle of a plain, without motion, and in an attitude similar, for example, to that of a sheep, will appear no larger than a sheep, till we have once discovered that it is a horse.

Whenever, therefore, we find ourselves benighted in an unknown place, where no judgment is to be formed of distance, we are every moment liable to deceptions of vision; hence originate, in part, the dreadful anecdotes of SPECTRES, and of those strange, hideous, and gigantic figures, which so many persons tell us they have seen. Though such appearances, it is commonly asserted, exist solely in the imagination, yet it is highly possible that they might appear literally to the eye, and be in every different respect seen as described to us. That this remark is consonant to truth will be allowed to be the more probable when we reflect, that whenever we cannot judge of an object except by the angle which it forms in the eye, this object is magnified in proportion to its nearness; and that, if it appeared at first to the spectator, who is alike incapable of distinguishing what he sees, and of judging at what distance he sees it; if it appeared, for instance, when at the distance of twenty or thirty paces, a few feet high, it must appear to him, when advanced to within a few feet of it, of a size stupendously increased. At this he must naturally be astonished and terrified, till he comes to touch the seemingly gigantic object, and to distinguish it; for in the very instant that he has an actual perception of what it is, the object will diminish, and appear to him as it in reality is. If, on the other hand, he is afraid to approach it, and he flies from the spot with precipitation, the only idea he will have of what had presented itself to him, will be that of the image that had been formed in his eye; the image of a figure he had seen, gigantic in its size and horrible in its form. The prejudice with respect to spectres, therefore, originates from nature; and such appearances depend not, as philosophers have supposed, solely upon the imagination.

The deception arising from the eye misjudging of magnitudes and distances is not, however, the only source of spectral illusions. Disease, particularly of the head, and violent excitement of the nervous system, often produce the most singular and vivid phantasms. Of this kind many cases are on record in the annals of medicine. One of the first that was brought to public notice, and one of the most remarkable, is that of M. Nicolai, the celebrated German bookseller, and member of the royal society of Berlin. It is related by himself. Nicolai had for years been subject to a congestion in the head, to relieve which he was frequently blooded by leeches.

"In the first two months of the year 1791 (says he) I was much affected in my mind by several incidents of a very disagreeable nature; and on the 24th of February a circumstance occurred which irritated me extremely. At ten o'clock in the forenoon my wife and another person came to console me; I was in a violent perturbation of mind, owing to a series of incidents which had altogether wounded my moral feelings, and from which I saw no possibility of relief: when suddenly I observed at the distance of ten paces from me a figure—the figure of a deceased person. I pointed at it, and asked my wife whether she did not see it. She saw nothing, but, being much alarmed, endeavoured to compose me, and sent for the physician. The figure remained some seven or eight minutes, and at length I became a little more calm; and, as I was extremely exhausted, I soon afterward fell into a troubled kind of slumber, which lasted for half an hour. The vision was ascribed to the great agitation of mind in which I had been, and it was supposed I should have nothing more to apprehend from that cause; but the violent affection having put my nerves into some unnatural state, from this arose further consequences, which require a more detailed description.

"In the afternoon, a little after four o'clock, the figure which I had seen in the morning again appeared. I was alone when this happened; a circumstance which, as may be easily conceived, could not be very agreeable. I went, therefore, to the apartment of my wife, to whom I related it. But thither also the figure pursued me. Sometimes it was present, sometimes it vanished; but it was always the same standing figure. A little after six o'clock several stalking figures also appeared; but they had no connexion with the standing figure. I can assign no other reason for this apparition than that, though much more composed in my mind, I had not been able so soon entirely to forget the cause of such deep and distressing vexation, and had reflected on the consequences of it, in order, if possible, to avoid them; and that this happened three hours after dinner, at the time when the digestion just begins.

"At length I became more composed with respect to the disagreeable incident which had given rise to the first apparition; but though I had used very excellent medicines, and found myself in other respects perfectly well yet the apparitions did not diminish, but, on the contrary, rather increased in number, and were transformed in the most extraordinary manner.

"After I had recovered from the first impression of terror, I never felt myself particularly agitated by these apparitions, as I considered them to be what they really were, the extraordinary consequences of indisposition; on the contrary, I endeavoured as much as possible to preserve my composure of mind, that I might remain distinctly conscious of what passed within me. I observed these phantoms with great accuracy, and very often reflected on my previous thoughts, with a view to discover some law in the association of ideas, by which exactly these or other figures might present themselves to the imagination. Sometimes I thought I had made a discovery, especially in the latter period of my visions; but, on the whole, I could trace no connexion which the various figures that thus appeared and disappeared to my sight had either with my state of mind or with my employment, and the other thoughts which engaged my attention. After frequent accurate observations on the subject, having fairly proved and maturely considered it, I could form no other conclusion on the cause and consequence of such apparitions than that, when the nervous system is weak, and at the same time too much excited, or rather deranged, similar figures may appear in such a manner as if they were actually seen and heard; for these visions in my case were not the consequence of any known law of reason, of the imagination, or of the otherwise usual association of ideas; and such also is the case with other men, as far as we can reason from the few examples we know.

"The origin of the individual pictures which present themselves to us must undoubtedly be sought for in the structure of that organization by which we think; but this will always remain no less inexplicable to us than the origin of those powers by which consciousness and fancy are made to exist.

"The figure of the deceased person never appeared to me after the first dreadful day; but several other figures showed themselves afterward very distinctly; sometimes such as I knew; mostly, however, of persons I did not know; and amongst those known to me were the semblances of both living and deceased persons, but mostly the former; and I made the observation, that acquaintances with whom I daily conversed, never appeared to me as phantasms; it was always such as were at a distance.

"When these apparitions had continued some weeks, and I could regard them with the greatest composure, I afterward endeavoured, at my own pleasure, to call forth phantoms of several acquaintance, whom I for that reason represented to my imagination in the most lively manner, but in vain. For, however accurately I pictured to my mind the figures of such persons, I never once could succeed in my desire of seeing them *externally;* though I had some short time before seen them as phantoms, and they had perhaps afterward unexpectedly presented themselves to me in the same manner. The phantasms appeared to me in every case involuntarily, as if they had been presented externally, like the phenomena in nature, though they certainly had their origin internally; and at the same time I was always able to distinguish with the greatest precision phantasms from phenomena. Indeed, I never once erred in this, as I was in general perfectly calm and self-collected on the occasion. I knew extremely well, when it only appeared to me that the door was opened, and a phantom entered, and when the door really was opened, and any person came in.

"It is also to be noted, that these figures appeared to me at all times, under the most different circumstances, equally distinct and clear. Whether I was alone or in company, by broad daylight equally as in the night-time, in my own as well as in my neighbour's house; yet when I was at another person's house they were less frequent, and when I walked the public street they very seldom appeared. When I shut my eyes, sometimes the figures disappeared, sometimes they remained even after I had closed my eyes. If they vanished in the former case, on opening my eyes again the same figures appeared which I had seen before.

"I sometimes conversed with my physician and my wife, concerning the phantasms which at the time hovered around me; for in general the forms appeared oftener in motion than at rest. They did not always continue present; they frequently left me altogether, and again appeared for a short or longer space of time, singly or more at once; but, in general, several appeared together. For the most part I saw human figures of both sexes; they commonly passed to and fro as if they had no connexion with each other, like people at a fair, where all is bustle; sometimes they appeared to have business with one another. Once or twice I saw amongst them persons on horseback, and dogs and birds; these figures all appeared to me in their natural size, as distinctly as if they had existed in real life, with the several tints on the uncovered parts of the body, and with all the different kinds of colours of clothes. But I think, however, that the colours were somewhat paler than they are in nature.

" None of the figures had any distinguishing characteristic; they were neither terrible, ludicrous, nor repulsive: most of them were ordinary appearances, some were even agreeable.

" On the whole, the longer I continued in this state, the more did the number of phantasms increase, and the apparitions become more frequent. About four weeks afterward I began to hear them speak: sometimes the phantasms spoke with one another, but for the most part they addressed themselves to me: those speeches were in general short, and never contained any thing disagreeable. Intelligent and respected friends often appeared to me, who endeavoured to console me in my grief, which still left deep traces in my mind. This speaking I heard most frequently when I was alone; though I sometimes heard it in company, intermixed with the conversation of real persons; frequently in single phrases only, but sometimes even in connected discourse.

" Though at this time I enjoyed rather a good state of health, both in body and mind, and had become so very familiar with these phantasms, that at last they did not excite the least disagreeable emotion, but on the contrary afforded me frequent subjects for amusement and mirth; yet as the disorder sensibly increased, and the figures appeared to me for whole days together, and even during the night, if I happened to awake, I had recourse to several medicines, and was at last again obliged to have recourse to the application of leeches.

" This was performed on the 20th of April, at eleven o'clock in the forenoon. I was alone with the surgeon, but during the operation the room swarmed with human forms of every description, which crowded fast one on another; this continued till half past four o'clock, exactly the time when the digestion commences. I then observed that the figures began to move more slowly; soon after ward the colours became gradually paler, and every seven minutes they lost more and more of their intensity, without any alteration in the distinct figure of the apparitions. At about half past six o'clock all the figures were entirely white, and moved very little; yet the forms appeared perfectly distinct; by degrees they became visibly less plain, without decreasing in number, as had often formerly been the case. The figures did not move off, neither did they vanish, which also had usually happened on other occasions. In this instance they dissolved immediately into air; of some even whole pieces remained for a length of time, which also by degrees were lost to the eye. At about eight o'clock there did not remain a vestige of any of them, and I never since experienced any appearance of the same kind. Twice or thrice since that time I have felt a propensity, if I may be so allowed to express myself, or a sensation, as if I saw something which in a moment again was gone. I was even surprised by this sensation whilst writing the present account, having, in order to render it more accurate, perused the papers of 1791, and recalled to my memory all the circumstances of that time. So little are we sometimes, even in the greatest composure of mind, masters of our imagination."

As the sense of sight is the effect of the action of light upon the eye, it is well known that too much light is extremely prejudicial, as well as too little.* Travellers, who cross countries covered with snow, are obliged to wear a crape before their eyes. Persons, therefore, who read or write much should accustom themselves to a moderate light.

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* It is, however, surprising how far the eye can accommodate itself to darkness, and make the best of a gloomy situation. When first taken from the light and brought into a dark room, all things disappear; or, if any thing is seen, it is only the remaining radiations that still continue in the eye. But, after a very little time, when these are spent, the eye takes advantage of the smallest ray that happens to enter; and this alone would in time serve for many of the purposes of life. There was a gentleman of great courage and understanding, who was a major under King Charles the First. This unfortunate man sharing in his master's misfortunes, and being forced abroad, ventured, at Madrid, to do his king a signal service; but unluckily failed in the attempt. In consequence of this he was instantly ordered to a dark and dismal dungeon, into which the light never entered, and into which there was no opening but by a hole at the top; down which the keeper put his provisions, and presently closed it again on the other side. In this manner the unfortunate loyalist continued for some weeks, distressed and disconsolate; but, at last, began to think he saw some little glimmering light. This internal dawn seemed to increase from time to time, so that he could not only discover the parts of his bed, and such other large objects, but, at length, he even began to perceive the mice that frequented his cell; and saw them as they ran about the floor, eating the crumbs of bread that happened to fall. After some months confinement, he was at last set free; but such was the effect of the darkness upon him, that he could not for some days venture to leave his dungeon, but was obliged to accustom himself by degrees to the light of the day.

There are many reasons to induce us to suppose that such persons as are short-sighted see objects larger than others; and yet it is a certain truth that they see them less.

Error is however not confined to any one sense; and that of HEARING is liable to similar mistakes with that of sight. This sense conveys no distinct intelligence of the distance whence a sounding body is heard: a great noise far off, and a small one very near, produce the same sensation; and, unless we receive information from some other sense, we can never distinctly tell whether the sound be a great or a small one. It is not till we have, by experience, become acquainted with any particular sound, that we can judge of the distance when we hear it. When, for example, we know the tone of a bell, we are then at no great loss to determine how far it is from us.

The air is the principal means of conveying the sound.* Sound is in effect always a vibration, or wave-like motion, communicated by other bodies to the air, and to our senses by the air striking on our auditory nerve.

Every body that strikes against another produces a sound, which is simple in such bodies as are not elastic, but which is often repeated in such as are. If we strike a bell, for instance, a single blow produces a sound, which is repeated by the undulations of the sonorous body, and which is multiplied as often as it happens to undulate or vibrate. These undulations succeed each other so fast, that the ear supposes them one continued sound; whereas, in reality, they form many sounds. Sounding bodies are therefore of two kinds; those unelastic ones, which being struck, return but a single sound; and those more elastic, returning a succession of sounds, which uniting together form a tone. This tone may be considered as a great number of sounds, all produced one after the other, by the same body, as we find in a bell which continues to sound for some time after it is struck. A continuing tone may be also produced from a non-elastic body, by repeating the blow quick and often, as when we beat a drum, or when we draw a bow along the string of a fiddle.

* The strokes of a bell give no sound, when it is placed under the receiver of an air-pump, which is exhausted of its air.

To know the manner in which musical sounds become pleasing, it must be observed, that no one continuing tone, how loud or swelling so ever, can give us satisfaction; we must have a succession of them, and those in the most pleasing proportion. The nature of this proportion may be thus conceived. If we strike a body incapable of vibration with a double force, or what amounts to the same thing, with a double mass of matter, it will produce a sound that will be doubly grave. Music has been said, by the ancients, to have been first invented from the blows of different hammers on an anvil. Suppose then we strike an anvil with a hammer of one pound weight, and again with a hammer of two pounds, it is plain that the two pound hammer will produce a sound twice as grave as the former. But if we strike with a two pound hammer, and then with a three pound, it is evident that the latter will produce a sound one third more grave than the former. If we strike the anvil with a three pound hammer, and then with a four pound, it will likewise follow that the latter will be a quarter part more grave than the former. Now, in comparing all those sounds, it is obvious that the difference between one and two is more easily perceived than between two and three, three and four, or any numbers succeeding in the same proportion. The succession of sounds will be, therefore, pleasing in proportion to the ease with which they may be distinguished. That sound which is double the former, or, in other words, the octave to the preceding tone, will among all others be the most pleasing harmony. The next to that, which is as two or three, or, in other words, the third, will be most agreeable. And thus universally, those sounds whose differences may be most easily compared are the most agreeable.

Sound has, in common with light, the property of being extensively diffused. Like light, it also admits of reflection. The laws of this reflection, it is true, are less distinctly understood than those of light: all we know is, that sound is principally reflected by hard bodies, and that their being hollow also sometimes increases the reverberation. The internal cavity of the ear, which is fashioned out in the temporal bone, like a cavern cut into a rock, seems to be fitted for the purposes of echoing sound with the greatest precision.

One of the most common complaints in old age is deafness; which probably proceeds from the rigidity of the nerves in the labyrinth of the ear. This disorder also proceeds sometimes from a stoppage of the wax, which art may easily remedy. In order to know whether the defect be an internal or an external one, let the deaf person put a repeating watch into his mouth, and if he hears it strike, he may be assured that his disorder proceeds from an external cause, and may be in some measure cured.

It often happens that people hear better with one ear than another; and these, it is observed, have what musicians call a bad ear. I have made many trials on persons thus circumstanced; and I have always found that their defect in judging properly of sounds proceeds from the inequality of their ears, and their receiving, by both at the same time, unequal sensations. In like manner, as such persons hear false, they also, without knowing it, sing false. They also frequently deceive themselves with regard to the side whence the sound comes, generally supposing the noise to come on the part of the best ear.

Hearing is a much more necessary sense to a man than to animals. In these it is only a warning against danger, or an encouragement to mutual assistance. In man, it is the source of most of his pleasures; and without it the rest of his senses would be of little benefit. A man born deaf, must necessarily be dumb; and his whole sphere of knowledge must be bounded by sensual objects. We have a singular, and perhaps an unexampled instance of a young man, who, being born deaf, was restored, at the age of twenty-four, to perfect hearing. The account, which is given in the memoirs of the Academy of Sciences, 1703, page 18, is in substance as follows:

"A young man of the town of Chartres, between the age of twenty-three and twenty-four, the son of a tradesman, and deaf and dumb from his birth, began to speak all of a sudden, to the utter astonishment of the whole town. He gave them to understand that, about three or four months before, he had heard the sound of the bells, and was greatly surprised at this new and unknown sensation. After some time, a kind of water issued from his left ear, and he then heard perfectly well with both. During these three months he was sedulously employed in listening, without saying a word, and accustoming himself to speak softly, so as not to be heard, the words pronounced by others. He laboured hard also in perfecting himself in the pronunciation, and in the ideas attached to every sound. At length, having supposed himself qualified to break silence, he declared that he could now speak, though as yet but imperfectly. Soon after, some able divines questioned him concerning his ideas of his past state; and principally with respect to God, his soul, the moral beauty of virtue, and deformity of vice. The young man, however, had not directed his solitary speculations into that channel. He had gone to mass indeed with his parents, had learned to sign himself with the cross, to kneel down, and to assume all the grimaces of a man in the act of devotion. But he did all this without any manner of knowledge of the intention or the cause; he saw others do the like, and that was enough for him. He knew nothing even of death, nor did it ever enter into his mind; he led a life of pure animal instinct; and though entirely taken up with objects of sense, and such as were present, he did not seem to have made such reflections even upon these, as might reasonably have been expected. The young man was not, however, deficient in understanding; but the understanding of a man, deprived of all commerce with others, is so very confined, that the mind is in some measure totally under the control of its immediate sensations."

It is highly possible, nevertheless, to communicate ideas to deaf men, which they previously wanted, and even to give them very precise notions of abstract and general subjects, by means of signs, and of letters. A person born deaf, may, by time and application, be taught to read, to write, and even, by the motions of the lips, to understand what is said to him; a plain proof how much the senses resemble, and may supply the defects of each other. It is probable, however, that, as most of the motions of speech are made within the mouth by the tongue, the knowledge from the motion of the lips, can be but very confined.

The sense of FEELING is spread over the whole body, but it employs itself differently in different parts. The sentiment which results from feeling cannot be excited otherwise than by the contact and immediate application of the superficies of some foreign body to that of our own. If we apply a foreign body against the breast, or upon the shoulder of a man, he will feel it; that is, he will know that there is a foreign body which touches him: but he will not have a single idea of the form of this body, because the breast touching the body in a single plane, or surface, he cannot gather from it any knowledge of this body. It is the same with respect to all other parts of the body which cannot adjust themselves upon the surface of foreign bodies, and bend themselves to embrace at one time many parts of their superficies. These parts of our body cannot, therefore, give any just idea of their form; but those which, like the hand, are divided into many small flexible and moveable parts; and which consequently can apply themselves, at one and the same time, upon the different planes of the superficies of the body, are those which, in effect, give us the ideas of their form and ot their size.

It is not, therefore, only because there is a greater quantity of nervous tufts at the extremity of the fingers than in any other part of the body; it is not, as it is vulgarly pretended, because the hand has the most delicate sense—that it is in effect the principal organ of feeling: on the contrary, we can say, that there are parts more sensible, and where the sense of feeling is more delicate, as the eyes, the tongue, &c. but it is merely because the hand is divided into many parts, all moveable, all flexible, all acting at one and the same time, and all obedient to the will; it is because the hand is the only organ which gives us distinct ideas of the form of bodies. Animals which have hands appear to be the most acute: apes do things so resembling the mechanical actions of man, that it seems as if they had the same succession of corporeal sensation for the cause of them. Animals which are deprived of this organ cannot have any knowledge distinct enough of the form of things; as they cannot grasp any object, and as they have not any part divided and flexible enough to be able to adjust itself upon the superficies of bodies, they certainly have not any precise notion of the form, any more than of the size of them. It is for this reason that we often see them in suspense, or frightened, at the aspect of objects with which they ought to be the best acquainted, and which are the most familiar to them. The principal organ of their feeling is the muzzle, because this part is divided in two by the mouth, and because the tongue is another part, that serves them at the same time to touch bodies, which we see them turn and turn again before they take them between their teeth.

It is therefore to the sense of feeling that we are indebted for the power of usefully exercising all our other faculties. One man does not, perhaps, possess more ingenuity or capacity than another, but because in his earliest infancy he made a greater, and a readier use of this sense. As soon as children are indulged with the liberty of their hands, they presently bring them into action, and are fond of touching whatever is presented to them. They are seen to amuse themselves, and take pleasure in handling every thing they are capable of grasping; they seem as if they were endeavouring to find out the form of bodies, by touching them on every side; and for a considerable time, they amuse themselves in this manner, or rather they inform themselves of new objects. In the rest of our life we ourselves, if we reflect upon it, amuse ourselves in a different method, in doing, or in seeking to do, any thing that is new.

Of the senses of SMELLING and TASTING there is little to be said worthy of observation. It is evident, that with respect to the first of these, there are animals which are infinitely superior to man; and perhaps there may exist creatures which in delicacy of taste may as much surpass the voluptuary, as the beagle does in acuteness of scent.

CHAPTER VI.

Of the apparent Varieties of the Human Species—Laplanders—Tartars—Chinese—Japanese—Formosans—Moguls—Persians—Arabians—Egyptians—Circassians—Turks—Russians—Negroes—Hottentots—Americans—Causes of this Variety—Accidental Varieties—White and Pied Negroes—Albinos—The Porcupine Man—Curious Child—Negro that from Black became White—Dwarfs—Curious Wedding—History of Baby—Giants—Narrative of extraordinary Twins—Siamese Youths.

THERE are many causes which contribute to the producing of an apparent variety between the different nations of the globe. Climate, food, manners, and customs, produce not only a difference in sentiment, but even in the external form of a different people.

In examining the surface of the earth and beginning our inquiries from the north, we find in Lapland, and the northern parts of Tartary, a race of small sized m whose figure is uncouth, and whose physiognomy is wild as their manners are unpolished. Though they see to be of a degenerate species, they yet are numerous, a the countries they occupy are extensive.

The LAPLANDERS. the Danes, the Swedes, the Musc vites, the inhabitants of Nova Zembla, the Samoyedes, t Ostiacs of the old continent, the Greenlanders, and the sa ges to the north of the Esquimaux Indians, of the tinent, appear to be of one common race, which has bee tended and multiplied along the coasts of the northern seas, and over deserts considered as uninhabitable by every other nation. In these countries, the visage is large and broad, the nose is flat and short, the eyes are of a yellowish brown inclining to black, the eyelids are drawn toward the temples, the cheek bones are extremely prominent, the mouth is very large, the lower part of the countenance is very narrow, the lips are thick and turned outward, the voice is shrill, the head is bulky, the hair is black and straight, and the skin is tawny. The Laplanders are small in stature, and, though meagre, they yet are of a squat form. In general, their size is about four feet, nor do the tallest exceed four feet and a half; and among these people, if there is any difference to be found, it depends on the greater or less degree of deformity.

The Danish Laplanders have a large black cat, which they make a confidant of all their secrets, and a counsellor in all their difficulties. Among the Swedish Laplanders, there is in every family a drum for the purpose of consulting the devil; and though the natives of these countries are robust and nimble, there is reason to suppose, from many circumstances, that they cannot live but in their own country, and in their own manner. In travelling over the ice and snow, they use skates made of fir, which are in length about two feet, and in breadth about half a foot, and which are raised and pointed before, and fastened to the foot by straps of leather. With these they make such despatch, that they easily overtake the swiftest animals. They also use a pole, pointed with iron at one end, and rounded at the other. This pole serves to push them along, to direct their course, to keep them from falling, to stop the impetuosity of their career, and to kill what game they overtake. With their skates they descend the steepest mountains, and scale the most craggy precipices; nor are the women less skilful in such exercises than the men. They are all accustomed to the bow and arrow; and it is asserted, that the Muscovite Laplanders launce a javelin with so much dexterity, that at the distance of thirty paces, they are sure to hit a mark no larger than a silver crown, and with such force, that it will transfix a human body. As hunters, their favourite pursuit is that of the ermine, the fox, the lynx, and the martin; and they barter the skins of these animals for their favourite articles of luxury, brandy and tobacco.

In winter the Laplanders clothe themselves with the skin of the rein-deer, and in summer with the skins of birds. To the use of linen they are utter strangers. The women of Nova Zembla have their nose and their ears pierced, in order to have them ornamented with pendants of blue stone; and, as an additional lustre to their charms, they also form blue streaks upon their forehead and chin. Those of Greenland dress themselves with the skin of the dog-fish: they also paint the visage with blue and yellow colours, and wear pendants in the ears. They all live underground, or in huts almost entirely covered with earth, and with the bark of certain trees, or the skin of certain fishes; and some form subterranean trenches, by which one hut communicates to another, and by which, during the winter months, they enjoy the conversation and society of their neighbours. A continued darkness for several months, obliges them to illuminate their dreary abode with lamps, which they keep alive with that very train oil they use as drink. Under all these hardships they are subject to few diseases, and live to a prodigious age. So vigorous indeed are the old men, that they are hardly to be distinguished from the young. The only infirmity they experience, and it is an infirmity common to them all, is that of blindness. Dazzled as they perpetually are by the strong reflection of the snow in winter, and enveloped in clouds of smoke in autumn and spring, rarely, when advanced in years, are they still found to retain the use of their eyes.

The TARTAR country, taken in general, comprehends the greatest part of Asia, and in fact extends from Russia to Kamtschatka. In length it occupies from eleven to twelve hundred leagues, and in breadth from seven hundred to seven hundred and fifty, a circumference twenty times larger than that of the whole kingdom of France.

All the Tartar nations have the upper part of the visage very large and wrinkled, even while yet in their youth. Their nose is short and flat, their eyes are little, and sunk in the head; their cheek bones are high; the lower part of their visage is narrow; their chin is long and prominent; their teeth are long and straggling; their eyebrows are so large as to cover the eyes; their eyelids are thick; the face is broad and flat; their complexion is tawny; and their hair is black. They have but little beard, thick thighs, and short legs, and, though but of middling stature, they yet are remarkably strong and robust. The ugliest of them are the Calmucks, in whose appearance there seems to be something frightful. They are all wanderers; and their only shelter is that of a tent made of hair or skins. Their food is horse-flesh and camel-flesh, either raw, or a little sodden between the horse and the saddle. They eat also fish dried in the sun. Their most common drink is mare's milk, fermented with millet ground into meal. They all have the head shaved, except a tuft of hair on the top, which they let grow sufficiently long to form into tresses on each side of the face. The women, who are as deformed as the men, wear their hair, which they bind up with bits of copper, and other ornaments of the same nature.

The majority of these tribes are alike strangers to religion, morality, and decency. They are robbers by profession; and the natives of Daghestan, who live in the neighbourhood of more polished countries, carry on a great traffic of slaves, whom they carry off by force, and afterward sell to the Turks and the Persians. Their wealth consists chiefly of horses, which are more numerous, perhaps, in Tartary, than in any other part of the world. They are taught, by custom, to live in the same place with their horses; they are continually employed in training and exercising them; and at length they reduce them to such implicit obedience, that they actually appear to understand, as it were, the intention of their riders.

Some travellers tell us, that the limbs of the Chinese are well proportioned, that their body is large and fat, their visage large and round, their eyes small, their eyebrows large, their eyelids turned upward, their nose short and flat; that, as for their beard, which is black, upon the chin there is very little, and upon each lip there are not more than seven or eight prickles: that those who inhabit the southern provinces of the empire, are more brown and tawny than the others; that, in colour they resemble the natives of Mauritania, and the more swarthy Spaniards; but that those who inhabit the middle provinces, are as fair as the Germans.

Le Gentel assures us, that the Chinese women do every thing in their power to make their eyes appear little, and oblong; that, for this purpose, it is a constant practice with the little girls, from the instruction of the mother, forcibly to extend their eyelids; and that, with the addition of a nose thoroughly compressed and flattened, of ears long, large, open, and pendant, they are accounted complete beauties. He adds, that their complexion is delicate, their lips are of a fine vermilion, their mouth is well proportioned, their hair is very black; but that, by the use of paint, they so greatly injure their skin, that before the age of thirty, they have all the appearance of old age.

So strongly do the JAPANESE resemble the Chinese, that we can hardly scruple to rank them in the same class. They only differ from them in being more yellow, or more brown. In general, their stature is contracted, their face, as well as their nose, is broad and flat, their hair is black, and their beard is little more than perceptible. They are haughty, fond of war, full of dexterity and vigour, civil and obliging, smooth-tongued, and courteous, but fickle and vain. With astonishing patience, and even almost regardless of them, they sustain hunger, thirst, cold, heat, fatigue, and all other hardships of life. Their ceremonies, or rather their grimaces, in eating, are numerous and uncouth. They are laborious, are very skilful artificers, and in a word, have nearly the same disposition, the same manners, and the same customs as the Chinese.

One custom which they have in common, and which is not a little fantastic, is, so to contract the feet of the women, that they are hardly able to support themselves. Some travellers mention, that in China, when a girl has passed her third year, they break the foot in such a manner, that the toes are made to come under the sole; that they apply to it a strong water, which burns away the flesh; and, that they wrap it up in a number of bandages till it has assumed a certain fold. They add, that the women feel the pain of this operation all their lives; th they walk with great difficulty, and that their gait is the last degree ungraceful. Other travellers do not s that they break the foot in their infancy, but that th only compress it with so much violence as to prevent growth; but they unanimously allow, that every woman of condition, and even every handsome woman, must ha a foot small enough to enter, with ease, the slipper of child of six years old.

Though the inhabitants o Aracan are blacker, yet they bea semblance to the Chinese. se of e great value upon a forehead large a lat: and, in to render it so, they apply a plate o the forehead of their children, the minute they a Their nostrils are large, and extended; their eyes are small and lively; and their ears are of such a length as to hang over their shoulders. They feed without disgust on mice, on rats, on serpents, and on fish, however corrupted. Their women are tolerably fair, and their ears are as long as those of the men. The people of Achan, who are situated farther to the north than those of Aracan, have also a flat visage, and an olive-coloured skin; and such is the want of refinement, that they allow their boys to go quite naked, and their girls with only a slight plate of silver over those parts which nature dictates to conceal.

Northward of the Philippine Islands is situated the island of FORMOSA, of which the natives, though situated at no great distance from the coast of Fokien in China, discover, however, no resemblance to the Chinese. According to Struys, the Formosans are of small stature, those particularly who inhabit the mountains, and their visage is broad. The women have large and full breasts, and a beard like the men; their ears, naturally long, they render still more so by certain thick shells, which they wear as pendants; their hair is very black, and very long and their complexion is of different shades of yellow These islanders, though averse to labour, are yet admirably skilled in the use of the javelin and bow; they are also excellent swimmers; and when they run, their swiftness is incredible.

The MOGULS (Hindoos,) and the other inhabitants of the peninsula of India, are not unlike the Europeans in shape and in features; but they differ more or less from them in colour. The Moguls are of an olive complexion; and yet, in the Indian language, the word *Mogul* signifies *White*. The women are extremely delicate, and they bathe themselves very often: they are of an olive colour, as well as the men; and contrary to what is seen among the women of Europe, their legs and thighs are long, and their body is short. Tavernier says, that, after passing Lahor, and the kingdom of Cashmire, the women have naturally no hair on any part of the body, and the men have hardly any beard. According to Thevenot, the Mogul women are tolerably fruitful, though exceedingly chaste. They likewise suffer little from the pains of child-birth, and are often known to be up and abroad the day following. He adds, that in the kingdom of Decan, they are allowed to marry, the husband by his tenth, and the wife by her eighth year; and at that age they not unfrequently have children. The women who become mothers so soon, usually cease bearing, however, before they arrive at thirty; and by that period, they appear wrinkled, and marked with all the deformities of age.

The customs of the different nations of India are all very singular, if not whimsical. The Banians eat nothing which has had life in it; they are even afraid to kill the smallest reptile, however offensive to them; they throw rice and beans into their rivers as food for the fishes, and grain of different kinds upon the earth for the birds and insects. When they meet with a hunter, or a fisher, they beg of him instantly to desist from his employment; if deaf to their entreaties, they offer him money for his gun, or nets; and when no persuasion, no offer will avail, they trouble the water, in order to frighten away the fishes, and cry with all their might, in order to put the birds and other game to flight.*

In Ceylon there is a species of savages, who go by the name of *Bedas*, and who occupy a small district on the northern part of the island. These Bedas seem to be totally different from all the nations around them. The spot they inhabit is entirely covered with wood, amidst which they keep themselves so closely concealed, that it is with

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* At Surat, there is a Banian hospital for animals, of all kinds, in which there is an extraordinary ward for rats, mice, bugs, &c.; and Forbes, in his Oriental Memoirs, states, that beggars are hired to pass the night at this institution, to afford a feast to the fleas, lice, and bugs! This is, indeed, carrying to its full extent the poet's principle to "feel for *all* that lives!"—EDITOR.

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great difficulty they are discovered. They do not speak the language of Ceylon: nor indeed has the language they do speak the smallest affinity to that of any of the other Indians. They have no villages, no houses, no intercourse with the rest of mankind. Their arms are the bow and the arrow, with which they destroy a number of boars, stags, and other animals; and though they never dress their meat, they yet sweeten it with honey, which they possess in great abundance.

The inhabitants of PERSIA, of Turkey, of Arabia, of Egypt, and of the whole of Barbary, may be considered as one and the same people, who, in the time of Mahomet, and of his successors, invaded immense territories, extended their dominions, and became exceedingly intermixed with the original natives of all those countries. The Persians, the Turks, and the Moors, are to a certain degree civilized; but the ARABIANS have, for the most part remained in a state of independence, which implies a contempt of laws. They live, like the Tartars, without order, without government, and almost without society: theft, robbery, and violence are authorized by their chiefs; they glory in their vices; to virtue they pay not the smallest respect; and of all human conventions, those only have they admitted, which owe their existence to fanaticism, and to superstition.

They are a people highly inured to labour; and to labour they take especial care to habituate also their horses. They allow this animal to eat and drink but once in twenty-four hours, and though their horses are necessarily meagre, they yet are excellent coursers, and seem, as it were indefatigable.

The EGYPTIAN women are very brown; their eyes are lively; their stature is rather low; their mode of dress is by no means agreeable; and their conversation is extremely tiresome. But though the women of Egypt are commonly rather short, yet the men are of a good height. Both, generally speaking, are of an olive colour; and the more we remove from Cairo, the more we find the people tawny, till we come to the confines of Nubia, where they are as black as the Nubians themselves.

The most inherent defects of the Egyptians are idleness and cowardice. They do nothing almost the whole day but drink coffee, smoke, sleep, remain indolent in one place, or chatter in the streets. They are highly ignorant, and are full of the most ridiculous vanity. Though they cannot deny but that they have lost every thing noble they once possessed; the sciences, the exercise of arms, their history, and even their language; and that, from an illustrious and valiant nation, they have become a people dastardly and enslaved; they yet scruple not to despise all other nations, and to take offence at the bare offer of carrying their children into Europe, in order to give them a knowledge of the arts and sciences.

"The women of CIRCASSIA," says Struys, "are exceedingly fair and beautiful. Their complexion is incomparably fine; their forehead is large and smooth; and without the aid of art, their eyebrows are so delicate, that they appear as threads of silk. Their eyes are large, soft, and yet full of animation; their mouth is small, and expressive of a smile; and their chin, what it ought to be in order to form a perfect oval. Their neck and breasts are admirably formed; their stature is tall, and the shape of their body easy; their skin is white as snow, and their hair of the most beautiful black. They wear a little cap of a black stuff, over which is fastened a roller of the same colour; but what is truly ridiculous, is, that, instead of this roller, the widows wear the bladder of an ox, or a cow, inflated as much as possible, by which they disfigure themselves amazingly. In the summer months, the inferior classes wear nothing but a shift, which is open down to the middle, and which is generally of a blue, yellow, or red colour. They are tolerably familiar with strangers, but at the same time faithful to their husbands, who are by no means inclined to be jealous of them."

The TURKS, who purchase a vast number of these women as slaves, are a people composed of many different nations. From the intermixture, during the crusades, of the Armenians, the Georgians, and the Turcomans, with the Arabians, the Egyptians, and even the Europeans, it is hardly possible to distinguish the native inhabitants of Asia Minor, of Syria, and of the rest of Turkey. All we can observe is, that the Turkish men are generally robust, and tolerably well made; that it is even rare to find among them persons either hump-backed or lame; that the women are also beautiful, well-proportioned, and free from blemishes; that they are very fair, because they seldom stir from home, and that, when they do go abroad, they are always veiled.

Before the Czar Peter I., we are told, the MUSCOVITES had not merged from barbarism. Born in slavery, they were ignorant, brutal, cruel, without courage, and without manners. Men and women bathed promiscuously in bagnios heated to a degree intolerable to all persons but themselves; and on quitting this warm bath, they plunged, like the Laplanders, into cold water. Their food was homely; and their favourite dishes were cucumbers, or melons, of Astracan, which, in summer, they preserved in a mixture of water, flour, and salt. From ridiculous scruples they refrained from the use of several viands, amongst which were pigeons and veal. Yet, even at this period of unrefinement, the women were skilled in the arts of colouring the skin, of plucking out the eyebrows, and of painting artificial ones. They also adorned themselves with pearls and jewels, and their garments were made of rich and valuable stuffs. From these circumstances, does it not appear that the barbarism of the Muscovites was near a close, and that their sovereign had less trouble in polishing them than some authors have endeavoured to insinuate? They are now a people in some degree civilized and commercial, fond of spectacles, and of other ingenious novelties.

From the regions of Europe and Asia, our attention is now to be directed to a race of people differing more from ourselves in external appearances than any that has been hitherto mentioned.

In the seventeenth or eighteenth degree of north latitude, on the African coast, we find the NEGROES of Senegal and of Nubia, some in the neighbourhood of the ocean, and others of the Red Sea; and after them, all the other nations of Africa, from the latitude of eighteen north to that of eighteen south, are black, the Ethiopians, or Abyssinians, excepted. It appears, then, that the portion of the globe which Nature has allotted to this race of men, contains an extent of ground, parallel to the equator, of about nine hundred leagues in breadth, and considerably more in length, especially northward of the equator. Beyond the latitude of eighteen or twenty, there are no longer any Negroes, as will appear when we come to speak of the Caffres, and of the Hottentots.

By confounding them with their neighbours the Nubians, we have been long in an error, with respect to the colour and the features of the ETHIOPIANS. Marmol says that the Ethiopians (Abyssinians) are absolutely black that their visage is large, and their nose flat; and in this description the Dutch travellers agree with him. The truth, however, is, that they differ from the Nubians, both in colour and in features. The skin of the Ethiopians is brown, or olive-coloured, like that of the southern Arabians, from whom, it is probable, they derive their origin. In stature they are tall; the features of their countenance are strongly marked; their eyes are large and beautiful; their nose is well proportioned; their lips are thin; and their teeth are white. Of the inhabitants of Nubia, on the contrary, the nose is flat, the lips are thick and prominent, and the countenance is exceedingly black. These Nubians, as well as the Barbarians, their western neighbours, are a species of Negroes, not unlike those of Senegal.

The Ethiopians are a people between the extremes of barbarism and of civilization. Their garments are of cotton, though those of the more opulent are of silk; their houses are low and of a bad construction; their lands too, are wretchedly neglected. These circumstances are owing to the behaviour of their nobles, who despise, maltreat, and plunder, as far as in them lies, the tradesmen and the common people. Each of these classes, however, lives separate from the other, and has its own villages or hamlets. Unprovided with salt at home, they purchase it from abroad for its weight in gold. So fond are they of raw meat, that, at their feasts, the second course, which they consider as the most delicate, consists of it entirely. Though they have vines, they yet have no wine, and their usual beverage is a sour composition made with tamarinds. They use horses for the purpose of travelling, and mules for that of carrying their merchandise. Of the arts or sciences they have little knowledge; their language is without rules; and their manner of writing, though their characters are more beautiful than those of the Arabians, is so imperfect, that, in order to finish an epistle, they require several days. In their mode of salutation there is something exceedingly whimsical. Each takes the right hand of the other and carries it to his mouth; this done, the saluter takes off the scarf of the person saluted, and fastens it round his own body; so that the latter is left half naked, few of the Ethiopians wearing any thing more than this scarf, and a pair of cotton drawers.

The first Negroes we meet with, are those who live on the south side of Senegal. These people, as well as those who occupy the different territories between Senegal and Gambia, are called *Jalofes*. They are all very black, well proportioned, and of a size sufficiently tall. Their features are less harsh than those of the other Negroes, and some of them there are, especially among the female sex, whose features are far from irregular. Among them, to be perfectly beautiful the colour must be exceedingly black, and exceedingly glossy: their skin, however, is highly delicate and soft, and, colour alone excepted, we find among them women as handsome as in any other country in the world. They are usually very gay, lively, and amorous.

Father du Tertre says expressly, that, if the Negroes are for the most part flat nosed, it is because the parents crush the noses of their children; that in the same manner they compress their lips, in order to render them thicker; and that of the few who have undergone neither of these operations, the features of the countenance are as comely, the nose is as prominent, and the lips are as delicate as those of the Europeans. It appears, however, that among the Negroes in general, thick lips and a nose broad and flat, are gifts from Nature, by which was originally introduced, and at length established, their custom of flattening the nose and thickening the lips of such as at their birth discovered a deficiency in these ornaments. Though the Negroes of Guinea are in general very healthy, yet they seldom attain what we term old age.

The Negroes in general are a remarkably innocent and inoffensive people. If properly fed, and unexposed to bad usage, they are contented, joyous and obliging; and on their very countenances may we read the satisfaction of their souls. If hardly dealt with, on the other hand, their spirits forsake them, and they droop with sorrow. Alike impressed with a sense of the injuries, and of the favours they have received, to a cruel master they are implacable foes; to an indulgent one, servants who will exert every effort of which human nature is capable, in order to express to him their zeal and their attachment. To their children, their friends, their countrymen, they are naturally compassionate and tender; cheerfully, of the little they have, do they communicate a share to those who are in necessity or in indigence, though otherwise than from that necessity, that indigence, they have not, perhaps, the smallest knowledge of them. That they have an excellent heart, therefore, is evident; and in having this, they have the seed of every virtue. Their sufferings demand a tear. Are they not already sufficiently unhappy, in being reduced to a state of slavery; in being obliged always to work, without ever reaping the smallest fruits of their labour? To crown their wretchedness, must they be abused, buffeted, treated like brutes? Humanity revolts at the idea of a conduct, which nothing but the thirst of gold could ever have introduced, and of which, from that thirst, every day will still, perhaps, produce an aggravated repetition, till an enlightened legislature shall put an end to a traffic which disgraces human nature.

Mr. Kolben, though he has given so minute a description of the HOTTENTOTS, is strongly of opinion, however, that they are Negroes. Like that of the latter, he assures us, their hair is short, black, frizzled and woolly: nor in a single instance did he ever observe it long.

Though of all the Hottentots the nose is very flat, and very broad, yet it would not be of that form, did not their mothers, considering a prominent nose as a deformity, think it a duty incumbent upon them to crush it presently after their birth. Their lips are also thick, and their upper lip is particularly so; their teeth are very white; their eyebrows are thick; their head is large; their body is meagre; their limbs are slender. They seldom live longer than forty years; and of this short duration of life, the causes doubtless are, their being so fond of filth, and residing continually in the midst of it; as also their living upon meat which is tainted or corrupted, of which indeed their nourishment chiefly consists. I might dwell longer upon the description of this nasty people; but as most travellers have given very large accounts of them, to their writings I refer. One fact, however, related by Tavernier, I ought not to pass in silence. The Dutch, he says, once took a Hottentot girl, soon after her birth; and after bringing her up among themselves, she became as white as an European. From this circumstance he presumes, that all the Hottentots would be of a tolerable whiteness, were it not for their custom of perpetually begriming themselves.

Though in AMERICA we observe less variety in the human form than might be expected in so extremely extensive a continent, it cannot yet be supposed, but that in such a diversity of climates and situations, a considerable diversity of inhabitants must also be found.

In beginning our inquiries, then, we find in the most northern parts of America a species of Laplanders, similar to those of Europe, or to the Samoyedes of Asia; and though, in comparison of the latter, they are few in number, yet they are diffused over a considerable extent of ground. Those who inhabit the land of Davis's Strait, are of diminutive size, of an olive complexion, and their legs are short and thick. They are skilful fishers; they eat their fish and their meat raw; their drink consists of pure water, or of the blood of the dog-fish; they are, moreover, very strong, and generally live to a great age. Here we see the figure, the colour, and the manners of the Laplanders; and, what is truly singular is, that, as among the Laplanders of Europe, we meet with the Finlanders, who are white, comely, tall, and tolerably well made; so, in like manner, among the Laplanders of America, we meet with another species of men, tall, well made, tolerably white, and with features exceedingly regular.

Of a different race from the former seem to be the savages of Hudson's Bay, and northward of the land of Labrador: they are, however, ugly, diminutive, and unshapely; their visage is almost entirely covered with hair, like the savages of the country of Yesso, northward of Japan. In summer they dwell under tents made of skins of there indeer; in winter they live under ground, like the Laplanders and the Samoyedes, and, like them, sleep together promiscuously, and without the smallest distinction. They likewise live to a great age, though they feed on nothing but raw meat and fish. The savages of Newfoundland have a considerable resemblance to those of Davis's Strait; they are low in stature; they have little or no beard; their visage is broad and flat; their eyes are large; they are generally rather flat-nosed; and, upon the whole, are far from being unlike the savages of the northern continent, and of the environs of Greenland.

Besides these savages, who are scattered over the most northern parts of America, we find others more numerous, and altogether different, in Canada, and in the vast extent of land to the Arctic sea. These are all tolerably tall, robust, vigorous, and well made; they have hair and eyes black, teeth very white, a complexion tawny, their beard scanty and over the whole of their body hardly a vestige of hair; they are hardy, indefatigable walkers, and very nimble runners. They are alike unaffected by excesses of hunger, and of repletion; they are by nature bold and fierce, grave and sedate. So strongly, indeed, do they resemble the Oriental Tartars, in the colour of the skin, the hair, and the eyes, in the scantiness of beard, and of hair, as also in disposition and in manners, that, were they not separated from each other by an immense sea, we should conclude them to be descended from that nation. In point of latitude, their situation is also the same; and this still farther proves how powerfully the climate influences not only the colour, but the figure of men.

Mr. Fabry, who travelled a prodigious way to the north-west of the Mississippi, and visited places which no European had visited before him, and of which, consequently, the savage inhabitants had not been destroyed, asserts, that that part of America is so deserted, that he often travelled a hundred and two hundred leagues, without observing a single human face, or the smallest vestige of a habitation; that, whenever he did meet with any habitations, they were always at immense distances from one another; that, in each of them, there were frequently no more than one family; sometimes there were two or three families, but never above twenty persons together; and that, between these twenty persons and twenty others, there was generally a space of a hundred leagues at least.

To dwell long on the customs of such savage nations, would be unnecessary. It has not been always attended to by authors, that what they have given us for established customs, and for the manners of a community, were nothing more than actions peculiar to a few individuals, and often determined by circumstances, or by caprice. Some nations they tell us, eat their enemies, some burn them, and some mutilate them; one nation is perpetually at war; and of another, the grand object is to live in peace; in one country the child kills his parent, when he has lived to a certain age; and in another the parent eats his child. All these stories, on which travellers have with so much complacency enlarged, mean nothing more than that one savage had devoured his enemy, another had burned or mutilated him, and a third had killed or eaten his child. All these things may be known to happen in one, as well as in several savage nations; for every nation in which there is no government, no law, no master, no habitual

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society, ought rather to be termed a tumultuous assemblage of men, barbarous and independent: of men who obey nothing but their own private passions, and who, incapable of having a common interest, are also incapable of pursuing one object, and of submitting to fixed and settled usages.

If, however, in the whole of North America, there were none but savages to be met with; in Mexico, and in Peru, there were found nations polished, subjected to laws, governed by kings, industrious, acquainted with the arts, and not destitute of religion.

In the present state of these countries, so intermixed are the inhabitants of Mexico and New Spain, that hardly do we meet with two visages of the same colour. In the town of Mexico, there are white men from Europe, Indians from the north, and from the south of America, and Negroes from Africa, &c. insomuch, that the colour of the people exhibits every different shade which can subsist between black and white. The real natives of the country are of a very brown olive colour, well made, and active: and though they have little hair, even upon their eyebrows, yet upon their head, their hair is long and very black.

In surveying the different appearances which the human form assumes in the different regions of the earth, the most striking circumstances is that of colour. This circumstance has been attributed to various causes; but experience justifies us in affirming, that of this the principal cause is the heat of the climate. When this heat is excessive, as at Senegal and in Guinea, the inhabitants are entirely black; when it is rather less violent, as on the eastern coasts of Africa, they are of a lighter shade; when it begins to be somewhat more temperate, as in Barbary, in India, in Arabia, &c. they are only brown; and, in fine, when it is altogether temperate, as in Europe and in Asia, they are white; and the varieties which are there remarked, proceed solely from those in the mode of living. All the Tartars, for example, are tawny, while the Europeans, who live in the same latitude, are white. Of this difference the reasons seem to be, that the former are always exposed to the air; that they have no towns, no fixed habitations; that they sleep upon the earth, and in every respect live coarsely and savagely. These circumstances alone are sufficient to render them less white than the Europeans, to whom nothing is wanting which may render life comfortable and agreeable. Why are the Chinese whiter than the Tartars, whom they resemble in all their features? It is because they live in towns, because they are civilized, because they are provided with every expedient for defending themselves from the injuries of the weather, to which the Tartars are perpetually exposed.

When cold becomes extreme, however, it produces some effects similar to those of excessive heat. The Samoyedes, the Laplanders, the Greenlanders, are very tawny; and it is even asserted, as we have already observed, that, among the Greenlanders, there are men as black as those of Africa. Here we see two extremes meet: violent cold, and violent heat, produce the same effect upon the skin, because these two causes act by one quality, which they possess in common. Dryness is this quality; and it is a quality of which intense cold is equally productive as intense heat; so by the former, as well as by the latter, the skin may be dried up, altered, and rendered as tawny as we find it among the Laplanders. Cold compresses, shrivels, and reduces within a narrow compass, all the productions of nature; and thus it is, that we find the Laplanders, who are perpetually exposed to all the rigours of the most piercing cold, the most diminutive of the human species.

The most temperate climate is between the degrees of forty and fifty. There we behold the human form in its greatest perfection; and there we ought to form our ideas of the real and natural colour of man. Situated under this zone, the civilized countries are, Georgia, Circassia, the Ukraine, European Turkey, Hungary, South Germany, Italy, Switzerland, France, and the North of Spain; of all which the inhabitants are the most beautiful, and the most shapely, in the world.

As the first, and almost the sole cause of the colour of mankind, we ought therefore to consider the climate; and though upon the skin the effects of nourishment are trifling, when compared with those of the air and soil, yet upon the form they are prodigious. Food which is gross, unwholesome, or badly prepared, has a strong and a natural tendency to produce a degeneracy in the human species; and in all countries where the people fare wretchedly, they also look wretchedly, and are uglier and more deformed than their neighbours. Even among ourselves, the inhabitants of country places are less handsome than the inhabitants of towns; and I have often remarked, that, in one village, where poverty and distress were less prevalent than in another village of the vicinity, the people of the former were, at the same time, in person more shapely, and in visage less deformed.

The air and the soil have also great influence, not only on the form of men, but on that of animals, and of vegetables. Let us, after examining the peasants who live on hilly grounds, and those who live imbosomed in the neighbouring valleys, compare them together, and we shall find, that the former are active, nimble, well shaped, and lively; the women commonly handsome; that on the contrary, in the latter, in proportion as the air, food, and water are gross, the inhabitants are clumsy, and less active and vigorous.

From every circumstance, therefore, we may obtain a proof, that mankind are not composed of species essentially different from each other, that, on the contrary, there was originally but one individual species of men, which, after being multiplied and diffused over the whole surface of the earth, underwent divers changes, from the influence of the climate, from the difference of food, and of the mode of living, from epidemical distempers, as also from the intermixture, varied *ad infinitum*, of individuals more or less resembling each other; that, at first, these alterations were less considerable, and confined to individuals; that, afterward, from the continued action of the above causes becoming more general, more sensible and more fixed, they formed varieties in the species; that these varieties have been, and are still, perpetuated from generation to generation, in the same manner as certain deformities, and certain maladies, pass from parents to their children; and, that, in fine, as they would never have been produced but by a concurrence of external and accidental causes, as they would never have been confirmed and rendered permanent but by time, and by the continued action of these causes, so it is highly probable, that in time they would in the same manner gradually disappear, or even become different from what they at present are, if such causes were no longer to subsist, or if they were in any material point to vary.

Such is Buffon's arrangement of the varieties of the human race. Other naturalists, however, differ widely from him, and the systems which they have formed are numerous. According to Linnæus, Man constitutes the first genus in the class mammalia; thus generically characterised—fore teeth cutting; upper four parallel; teats two, pectoral.

1. Homo sapiens. Diurnal; varying by education and situation. The varieties are as follow—

α. Four-footed, mute, hairy. *Wild man.*

β. Copper-coloured, choleric, erect. *American.* Hair black, straight, thick; nostrils wide; face harsh; beard scanty; obstinate, content, free. Paints himself with fine red lines.

γ. Fair, sanguine, brawny. *European.* Hair yellow, brown, flowing; eyes blue; gentle, acute, inventive. Covered with close vestments. Governed by laws.

δ. Sooty, melancholy, rigid. *Asiatic.* Hair black; eyes dark; severe, haughty, covetous. Covered with loose garments. Governed by opinions.

ε. Black, phlegmatic, relaxed. *African.* Hair black, frizzled; skin silky; nose flat; lips tumid; crafty, indolent, negligent. Anoints himself with grease. Governed by caprice.

2. Home monstrosus. Varying by climate or art. The varieties of these species are as follow—

α. Small, active, timid. *Mountaineer.*

β. Large, indolent. *Patagonian.*

γ. Less fertile. *Hottentot.*

δ. Beardless. *American.*

ε. Head conic. *Chinese.*

ξ. Head flattened. *Canadian.*

It is evident that this classification is faulty in many respects. That of Gmelin, which is much more simple, makes a nearer approach to correctness. He admits but of one species in the genus, which he arranges under the following varieties:

α. H. albus. *White man.* Formed by the rules of symmetrical elegance and beauty; or at least by what is generally regarded as such. This division includes almost all the inhabitants of Europe; those of Asia, on this side the Obi, the Caspian, Mount Imaus, and the Ganges; as well as the natives of the north of Africa, of Greenland, and the Esquimaux.

β. H. badius. *Brown man.* Of a yellowish brown colour; with scanty hair, flat features, and small eyes. This variety includes the whole of the inhabitants of Asia not comprised in the preceding.

γ. H. niger. *Black man.* Black complexion, frizzly hair, flat nose, and thick lips. The whole of the inhabitants of Africa, excepting those of its more northerly parts.

δ. H. cupreus. *Copper-coloured or red man.* The complexion of the skin resembles the hue of unburnished copper. All the inhabitants of America, except the Greenlanders and Esquimaux.

ε. H. fuscus. *Tawny man.* Chiefly of a dark blackish-brown colour; having a broad nose, and harsh, coarse, straight hair. The inhabitants of Australasia, Polynesia, and most of the indian islands.

Blumenbach, Lacepede, and Cuvier divide man into three principal races; Dumeril makes six; and Bory St. Vincent extends the number to fifteen species, with numerous varieties; " each of which species," he declares with his usual presumptuous flippancy, " we may with a safe conscience believe to have had its peculiar Adam, and its peculiar place of origin." His species are, 1. The *Japetic*, divided into four races, of which the German has two varieties. 2. The *Arabian*. 3. The *Hindoo*. 4. The *Scythian*. 5. The *Sinic* (or Chinese.) 6. The *Hyperborean*. 7. The *Neptunian*, containing three races. 8. The *Australian*. 9. The *Columbian*. 10. The *American*. 11. The *Patagonian*. 12. The *Ethiopian*. 13. The *Caffre*. 14. The *Melanian*. 15. The *Hottentot*. The latter he is pleased to consider as the connecting link between the genus Homo and the genus Oran.

The most recent writer on this subject is M. Lesson. His arrangement is ingenious; and, unlike M. Bory St. Vincent, he does not consider man as only a better sort of monkey. " Man," says he, " differs from all other beings by the eminently social qualities which distinguish him; by the power of thinking, he raises himself to the divinity from whom he emanates; his memory retains facts, and classes and transmits them to others by written signs and speech; he manifests a varied industry, which protects him from all bodies that might be hurtful to him; by means of it he also satisfies his wants, and secures his comforts or his pleasures; man every where lives in families, ruled by chiefs; he establishes laws conformable to his necessities, and designed to protect his rights. He subdues animals, and bends them to obey his will, and breaks up the surface of the earth, and draws his subsistence from it; he has forced vegetables to vary their fruits, and to improve their flavour; by exchanging the produce of his soil, he procures for himself new resources. Wealth heaps its gifts upon him, luxury is introduced, the arts are cultivated, society becomes polished, and manners are softened: happy were he, did not war, and its scourges, and death, and sickness, perpetually remind him that the great work of nature must be accomplished.

"Man is born weak. He remains at the breast from twelve to eighteen months; does not walk alone till nearly his second year; remains a long while feeble; reaches adolescence about the age of sixteen, manhood at thirty, mature age at forty, and old age at sixty, and then rapidly declines toward the close of his existence.

"Man is a cosmopolite; that is to say, his organization is fitted for all climates. He lives under the equator, and in the temperate zones, as well as in the rigorous climes of the north and the south. He does not appear, however, to dwell beyond the fifty-fifth degree of southern latitude and the sixty-fith of northern.

"He is polyphagous, or accommodates himself to all kinds of nourishment, though he lives chiefly on fruits and farinaceous grain.

"In the human species we may establish three principal races, each of which contains varieties more or less strongly marked. These are, the *White* or *Caucasian;* the *Yellow* or *Mongolian;* and the *Black* or *Melanian.*

I. WHITE RACE, OR CAUCASIAN.

This race is characterized by regularity of form, according to the ideas which we have of beauty. The head is oval; the facial angle eighty-five degrees; the skin white, or usually approaching to white; the nose long; the cheeks coloured; the hair long, soft, and of all shades from a light flaxen to the deepest brown. This race derives its name from the circumstance of tradition assigning the Caucasian chain as its original seat.

BRANCH 1. *Aramean.* It comprehends the Assyrians, Chaldeans, Arabs, Phenicians, Jews, Abyssinians, and, in all probability, the Egyptians.

BRANCH 2. *Indian, German,* and *Pelasgic.* It comprises the Celts, Cantabrians, Persians, &c.

BRANCH 3. *Scythian* and *Tartarian.* It is composed of Scythians, Parthians, and Turks; the Finlanders, and the Hungarians also belong to it, with an infinite number of tribes to the north and east of the Caspian.

Variety 1. *Malay* branch. The people who are called Malays have hitherto been united under the name of the Malay race, though they scarcely differ from the Hindcos; they merely form a variety of that people, distinct, and presenting four types, which are, the Malay proper, the Javanese, the Macassar or Budjis, and the Amboynese or Timorian. This variety is confined to the equatorial islands of the Indian Archipelago, or *Malaysia* (as we propose to call it,) between Madagascar on the east, the Philippines on the west, the peninsula of Malacca on the north, and the land of Papua, or New Guinea, on the south.

Variety 2. *Oceanic* branch. This variety, which authors class in the *Malay* race, is only a branch of the great Hindoo family, of which it has all the characters. It is disseminated through the islands which are scattered over the immense South Sea, and it, in great part, peoples all the Oceanic lands, from the Sandwich Islands to New Zealand and Easter Island.

II. YELLOW OR MONGOLIAN RACE.

This race has a flat face, prominent cheek bones, narrow and oblique eyes, the nose rather flattened, straight black hair, the beard either very thick, or, more frequently, very thin, the complexion commonly olive, and the facial angle from sixty-five to eighty degrees.

This race forms powerful empires in China and Japan. It inhabits (with the exception of a part of India) all eastern Asia, Lapland, America, and a greater number of the South Sea islands.

Branch 1. *Mantchu;* comprehends the people of Bucharia, Daouria, and those who extend from the Caspian to the frontier of Japan.

Branch 2. *Sinic;* forms the immense empire of the centre, or China, so remarkable for its antique stationary civilization; Japan, &c.

Branch 3. *Hyperborean*, or *Esquimaux*. This branch comprises a part of the Laplanders, the Samoyedes, the Labrador Esquimaux, the natives of the north-west coast of America, and those of the Kurile and Aleutian islands. It seems to be imprisoned by ice, and in the most wretched countries of the earth, where it lives in smoky and subterraneous caves during a six month's night.

BRANCH 4. *American.* This branch, which peoples the American continent, presents numerous varieties. The most remarkable are, the *Peruvian* and *Mexican*, which live under the equator, and founded vast empires; the *Araucanians*, which includes several sub-varieties; the *Patagonians*, confined to the eastern extremity of America, with that of the *Puelces*. Numerous tribes of Brazil, Guiana, the Floridas, and Canada, form also swarms which it is difficult to characterize: the Botocudos of Brazil, however, clearly appear to belong to the Mongol race. . Till the present time, the characters assigned to the American or Carib race have been a red skin, as if coppered, dark brown hair, a large beardless face, and a nose rather broad and flat. M. Bory forms them into three species, which he denominates the Columbian, American, and Patagonian.

The FIFTH BRANCH of this race is that which we have named the *Mongol-pelagian*, or *Caroline*, which peoples the long chain of isles called the archipelago of the Caroline islands, in the great ocean, and which extends from the Philippines to the Mulgrave islands.

III. BLACK, OR MELANIAN, RACE.

This epithet is given by M. Bory to a single variety, but we will appropriate it to the whole of the people who are black or blackish, and we prefer it to the name of *Ethiopian*, which carries with it an erroneous idea This race has the jawbones very prominent in front, teeth inclined, a black or blackish complexion, the hair sometimes glossy, harsh, and rough, but more often woolly and very curled, a short and extremely broad nose, a flat face, thick lips, and the facial angle from seventy to seventy-five degrees.

This race inhabits all the south of Africa; forms mixtures with the Moors of that part of the world; and lives on the great islands of Madagascar, Papua, the New Hebrides, Solomon's Isles, Van Dieman's Land, and New Holland.

BRANCH 1. *Ethiopian..* This variety of mankind is the true type of the African Negroes. Its principal characters are, a tolerably deep black colour of the skin, a narrow head, a contracted skull, teeth obliquely set, prominent cheek bones, thick lips, a broad flat nose, little beard, large hips, bowed legs, and the gemini muscles but slightly marked. It inhabits Senegal, Guinea, Congo, &c. &c.

Branch 2. *Caffre.* This branch, which inhabits a part of the southern extremity of Africa, to the eastern coast, appears to extend to Madagascar. It is composed of large, well made men, whose skin is of a grayish black.

Branch 3. *Hottentot.* This branch, the most defective as to form, lives in southern Africa, at the Cape of Good Hope. The facial angle is at most sixty-five degrees; the forehead is prominent, the hair is very short and woolly; the beard is scanty; the tint of the skin is bistre or soot coloured; but that which, according to M. Lichtenstein, more especially distinguishes it is, that, like the monkey, the bones of the nose are united in a single mass, and the olecranian cavity of the shoulder is perforated.

Branch 4. *Papuan;* bears the closest resemblance to the Cafro-Madagascan Negroes, and this analogy is confirmed by several particularities of their constitution and habits. Their skin is of a black colour mixed with an eighth of yellow; their hair is black, very thick, and moderately woolly; the features are tolerably regular; the nose is rather flat and thick, and the nostrils are lengthened transversely. These people inhabit the islands of Papua, New Caledonia, the New Hebrides, New Ireland, Bouka, and the archipelago of Solomon. A hybrid variety, the *Malay-negro,* dwells in the great island of Waigiou and the north of New Guinea.

Branch 5. *Tasmanian;* approximates to the Papuan by its physical conformation. It has also some analagous customs. It inhabits Van Dieman's Land or Tasmania.

Branch 6. *Alfourous-Endamêne.* These people, who are as yet but little known, are the *Araforas* or *Alfourous* of voyagers, *los Indios* of the Spaniards, the *Negroes del Monte* of Mindanao, the *Vinzimbers* of Madagascar. They have a blackish skin; straight harsh hair; a large face; the cheek bones projecting; the beard thick and very black; and their manners are brutal. They thrust a bit of wood through the cartilage of the nose.

Branch 7. *Alfourous-Australian.* The people of this branch inhabit the whole continent of New Holland, and are plunged in the grossest barbarism. They have thick, glossy, harsh hair; a thick beard; obliquely-set teeth; a flat large nose; high cheek bones; and the extremities pretty often lank and with little hair."

Of ACCIDENTAL VARIETIES IN THE HUMAN SPECIES.] Besides those great varieties proceeding from general causes, which have been just noticed, says Buffon, and which serve as marks of distinction to the nations of the earth, there are others, which affect only individuals, which appear casual and often unfortunate deviations from the general standard. The *Blafards*, or WHITE NEGROES (if this expression may be admitted,) are among the first of these extraordinary deviations which attract our attention. They are found occasionally in all parts of the East Indies, at Madagascar, in Africa, at Carthagena, and most parts of South America. They are a weak, imbecile class of human beings, and are in general barren. The Negresses at Carthagena and Panama, more frequently than any others, are known to produce Blafards; and it is to be observed, that the climate there is more debilitating to the human frame. "Those of Darien (says a modern traveller) have so marked a resemblance to the White Negroes of Africa, that we cannot but assign them the same origin. Their colour is dead white, like that of paper or muslin, and without the least appearance of red on any part of the surface of the body. They are born white, and their skin never darkens. In Africa their hair is white and woolly, like that of the genuine Negroes; and in Asia it is long, and as white as snow, or reddish inclining to yellow. Their eyebrows and eyelashes resemble the skin of the eider-duck, or rather the soft down which is about the throat of a swan. The iris is sometimes of a pale blue, and sometimes of a lively yellow inclining to red dish. They are in general remarkably feeble and low of stature." A white Negress, of the name of Genevieve, was born of black parents in the island of Dominica, in the year 1759. Her father and mother were brought from the Gold Coast in Africa, and were perfectly black. Genevieve was white in every part of her body. She was about four feet eleven inches high, and her body was well proportioned.

Every feature was completely correspondent to those of the Negroes. The lips and the mouth, however, though perfectly formed like those of other Negroes, had a singular appearance for want of colour; they were as white as the rest of her skin, with no appearance of red. Her skin in general was of a tallow colour; when she approached the fire, however, there was a slight tinge of red appeared in her cheeks. Her head was well covered with wool of about an inch and a half in length. It was harsh, thick. and frizzled; it was white at the roots, and reddish at the extremity. The eyebrows were just marked by a light white down, and the eyelashes were rather more apparent. Her eyes appeared of a dull blue. This white Negress endured the full light of the sun without winking or any apparent inconvenience. She was, what is called, short-sighted, but she could distinguish the smallest objects at two or three inches from her eyes. But the most singular circumstance respecting her eyes, was a continual motion, or oscillation, by which they alternately turned from and toward each other; and this motion she was not able to stop.

Her teeth were well arranged, and finely enamelled there was no disagreeable smell about her, nor any oiliness upon the skin, as is often the case with common Negroes. Her hands were large but well formed, and were covered with wrinkles, like those of an old person. Her feet and her ancles were also wrinkled. Her parents produced only this girl white; the rest of their children were all perfect Negroes.

It has been said that these White Negroes, if united with Blacks, would produce a pied race; but however this be, it is certain that pied or spotted Negroes are not uncommon. It arises evidently from some defective organization in the skin; and we have instances even in this climate of a similar deviation from the ordinary course of nature.

The Albinoes are, among the Whites, that which the *Blafards*, as Buffon denominates them, are among the Blacks. This name was originally given by the Portuguese to Moors who were born white, and has since been appropriated to similar individuals in our own race. The best account which has yet appeared of Albinoes is the following, which was sent by Dr. Traill of Liverpool to Nicholson's Journal.

" Robert Edmond and his wife Anne are both natives o Anglesey in North Wales. He has blue eyes, and hai almost black; her eyes are blue, and her hair of a light brown. Neither of them have remarkably fair skins. They have been married fourteen years. Their first child, a girl, had blue eyes and brown hair. The second, a boy (now before me,) has the characteristics of an Albino: viz. very fair skin, flaxen hair, and rose coloured eyes. The third and fourth children were twins, and both boys; one of them has blue eyes and dark brown hair; the other was an Albino. The former is still alive: the Albino lived nine months, though a very puny child. The fifth child, a girl, had blue eyes and brown hair. The sixth, and last now here, is a perfect Albino.

"The oldest of these Albinoes, is now nine years of age, of a delicate constitution, slender, but well formed both in person and in features; his appetite has always been bad: he frequently complains of a dull pain in his forehead; his skin is exceedingly fair; his hair flaxen and soft; his cheeks have very little of the rose in them. The iris and pupil of his eyes are of a bright rose-red colour, reflecting in some situations an opaline tinge. He cannot endure the strong light of the sun. When desired to look up, his eyelids are in constant motion, and he is incapable of fixing the eye steadily on any object, as is observed in those labouring under some kind of slight ophthalmia, but in him is unaccompanied by tears. His mother says, that his tears never flow in the coldest weather; but when vexed they are shed abundantly. The white of the eye is generally bloodshot. He says he sees better by candle than by daylight; especially at present, when the reflection from the snow on the ground is extremely offensive to him. He goes to school, but generally retires to the darkest part of it to read his lesson, because this is most agreeable to his eyes. In my room, which has a northern aspect, he can only distinguish some of the letters in the pages of the Edinburgh Review; but, if the light is not permitted to fall full on the book he is able to read most of them. He holds the book very near his eye. His disposition is very gentle; he is not deficient in intellect. His whole appearance is so remarkable, that some years ago a person attempted to steal him, and would have succeeded in dragging him away, had not his cries brought a person to his assistance.

"The youngest child is now nine months old; is a very stout, lively, noisy, and healthy boy In other respects he perfectly resembles his brother.

"The mother says, that one of her cousins had a very fair skin, flaxen hair, and very weak light blue eyes.

"Professor Blumenbach of Gottingen, in a curious memoir read before the royal Society of that city, endeavoured to prove, that the red colour of the eyes of the Albinoes of Chamouni was owing to the want of pigmentum nigrum within the eye. About the same time, Buzzi of Milan had an opportunity of dissecting an Albino, and proved, that the pigmentum nigrum of the choroid coat, and also that portion of it which lies behind the iris, and is called uvea by anatomists, were wanting; thus demonstrating what Blumenbach had supposed. This deficiency was observed before by Blumenbach in some white dogs, owls, and in white rabbits. Buzzi discovered, that the layer of the skin called rete mucosum was also wanting, and to this he with great probability attributes the peculiar fairness of the skin; the colouring matter of the Negro, and of the hair of animals, being lodged in this membrane.

"It is well known, that from the tawny natives of Asia, Africa, and America, Albinoes sometimes spring, who are said to be capable of propagating a race like themselves, when they intermarry. Whether this be the case with the Albinoes of Europe is unknown; for as far as I have been able to learn, not one of them was a female.* There are on record eight instances of European Albinoes, besides the three now noticed. Two of these are described by Saussure, four by Buzzi, one by Helvetius, and one by Maupertius, all of whom were males. The parents of the two young men of Chamouni had female children, of the usual appearance. The woman of Milan had seven sons, three of whom were Albinoes. Mrs. Edmond's girls were all of the usual appearance, but all her boys were Albinoes. Among these eleven cases not one Albino girl has been found. This at least proves, that males are more subject than females to this singular structure.

"From the perpetuation of this variety of the human species in Guinea, and other places, as well as from the account Mrs. Edmond gives of her cousin, it would seem to be hereditary."

Among the sports of Nature, with respect to the human race, not one of the least singular was the PORCUPINE MAN. He was born in the county of Suffolk in 1710. The skin of his body was covered with excrescences like thorns, or prickles, and about the thickness of a packthread. His face, the palms of his hands, and the soles of his feet, were the only parts which were free from these singular warts. They were of a reddish brown, and had such a degree of hardness and elasticity, as to rattle when the hand was moved over the body. They were half an inch long in some parts, and were shorter in others. They did not appear till two months after his birth; but what is most extraordinary, they dropped off every winter, and were renewed in the spring. In other respects the man enjoyed a good state of health. He had six children, all of whom, like their father, were covered with these excrescences.

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* Several instances have occurred in England, some of which have been exhibited, under the name of Albinesses.

A child was exhibited in Paris in 1774, whose name was Anna Maria Herig, she was born at Dachstal, in Lorraine, in 1770. Neither her father nor mother had any spots whatever on their skin, but the child was spotted all over the body, and even on the face, with marks, some large and some small, the greater part of which were raised above the skin, like the little blisters or bladders on veal in some other parts they were covered with hair, like that of a deer. Both the skin and the hair were of a brown colour; there were also spots quite destitute of hair, and the naked skin in those spots resembled tanned leather. In other respects the child was of a pleasant countenance; had handsome eyes, but very large eyebrows. She appeared uneasy in summer from the heat; for besides the hair spots in other parts of her body, her stomach and belly were covered with longish hair, of a brown colour on one side, and lighter on the other; and her back seemed to be covered with a tunic of hairy skin, which adhered to the body only in certain parts, and which in reality consisted of a number of little loops or tubercles very near to each other, and which covered her whole back to her reins; these tubercles appeared of a different nature from the rest of her skin, and were insensible when pinched. The lower part of her loins, and the tops of her shoulders were covered with hair more than two inches in length. Those parts of the skin which were not deformed with these spots, were remarkably white and delicate.

There have been some very extraordinary instances of a change in the colour of Negroes. Frances, the negro cook of Col. Barnet, was born in Virginia, and was of a very strong and robust constitution. Her skin was originally as black as that of any African Negro; but about the age of fifteen years, she observed that those parts of her skin which were near her nails and her fingers gradually became white. In a short time after, her mouth underwent the same change; and from that period to her fortieth year, the white has been gradually extending over her whole body. Those parts which have changed colour are as delicate as the skin of the most beautiful European, and display very distinctly the ramifications of the red veins. The neck and the back have preserved more of their original colour than any other part; the head, the face, the breast, the belly, the thighs, legs, and arms are become almost entirely white. When the passions of resentment, shame, &c., are excited in this negress, her face and her breast blush with redness. In the same manner all those parts which are exposed to the fire, become red with the action of heat. She has always enjoyed a remarkably good state of health, has never made use of any application to her skin; she has always been well clothed, and no difference is perceptible between those parts which have been covered, and those which have been exposed.

Among these varieties of nature in the human species we may reckon Dwarfs and Giants. Deceived by some optical illusion, the ancient historians gravely mention whole nations of pigmies as existing in remote quarters of the world. The more accurate observations of the moderns, however, convince us that these accounts are entirely fabulous.

The existence, therefore, of a pigmy race of mankind, being founded in error or in fable, we can expect to find men of diminutive stature only by accident, among men of the ordinary size. Of these accidental dwarfs, every country, and almost every village can produce numerous instances. There was a time when these unfavourable children of Nature were the peculiar favourites of the great; and no prince, or nobleman, thought himself completely attended, unless he had a dwarf among the number of his domestics. These poor little men were kept to be laughed at, or to raise the barbarous pleasure of their masters, by their contrasted inferiority. Even in England, as late as the time of King James the First, the court was at one time furnished with a dwarf, a giant, and a jester. These the king often took a pleasure in opposing to each other, and often fomented quarrels among them, in order to be a concealed spectator of their animosity.

It was in the same spirit that Peter of Russia, in the year 1710, celebrated a marriage of dwarfs. This monarch, though raised by his native genius far above a barbarian, was, nevertheless, still many degrees removed from actual refinement. His pleasures, therefore, were of the vulgar kind; and this was among the number. Upon a certain day, which he had ordered to be proclaimed several months before, he invited the whole body of his courtiers, and all the foreign ambassadors, to be present at the marriage of a pigmy man and woman. The preparations for this wedding were not only very grand, but executed in a style of barbarous ridicule. He ordered, that all the dwarf men and women, within two hundred miles, should repair to the capital; and also insisted, that they should be present at the ceremony. For this purpose, he supplied them with proper vehicles; but so contrived it, that one horse was seen carrying a dozen of them into the city at once, while the mob followed shouting and laughing from behind. Some of them were at first unwilling to obey an order, which they knew was calculated to turn them into ridicule, and did not come; but he soon obliged them to obey; and, as a punishment, enjoined that they should wait upon the rest at dinner. The whole company of dwarfs amounted to seventy, beside the bride and bridegroom, who were richly adorned, and in the extremity of the fashion. For this company in miniature, every thing was suitably provided; a low table, small plates, little glasses, and, in short, every thing was so fitted, as if all things had been dwindled to their own standard. It was his great pleasure to see their gravity and their pride; the contention of the women for places, and the men for superiority. This point he attempted to adjust, by ordering that the most diminutive should take the lead; but this bred disputes, for none would then consent to sit foremost. All this, however, being at last settled, dancing followed the dinner, and the ball was opened with a minuet by the bridegroom, who measured exactly three feet two inches high. In the end matters were so contrived, that this little company, who met together in gloomy pride, and unwilling to be pleased, being at last familiarized to laughter, joined in the diversion, and became, as the journalist tells us, extremely sprightly and entertaining.

But the most complete history of a dwarf is preserved by M. Daubenton, in his Natural History. This dwarf, whose name was Baby, was well known, having spent the greatest part of his life at Luneville, in the palace of Stanislaus, the titular king of Poland. He was born in the village of Plaisne, in France, in the year 1741. His father and mother were peasants, both of good constitutions, and inured to a life of husbandry and labour. Baby, when born, weighed but a pound and a quarter. We are not informed of the dimensions of his body at that time, but we may conjecture they were very small, as he was presented on a plate to be baptized, and for a long time lay in a slipper. His mouth, although proportioned to the rest of his body, was not, at that time, large enough to take in the nipple; and he was, therefore, obliged to be suckled by a she-goat that was in the house; and that served as a nurse, attending to his cries with a kind of maternal fondness. He began to articulate some words when eighteen months old; and at two years he was able to walk alone. He was then fitted with shoes that were about an inch and a half long. He was attacked with several acute disorders; but the small-pox was the only one which left any marks behind it. Until he was six years old, he ate no other food but pulse, potatoes, and bacon. His father and mother were, from their poverty, incapable of affording him any better nourishment; and his education was little better than his food, being bred up among the rustics of the place. At six years old he was about fifteen inches high; and his whole body weighed but thirteen pounds. Notwithstanding this, he was well proportioned and handsome; his health was good, but his understanding scarcely passed the bounds of instinct. It was at that time that the king of Poland, having heard of such a curiosity, had him conveyed to Luneville, gave him the name of Baby, and kept him in his palace.

Baby, having thus quitted the hard condition of a peasant, to enjoy all the comforts and the conveniences of life, seemed to receive no alteration from his new way of living, either in mind or person. He preserved the goodness of his constitution till about the age of sixteen, but his body seemed to increase very slowly, during the whole time; and his stupidity was such that all instructions were lost in improving his understanding. He could never be brought to have any sense of religion, nor even to show the least signs of a reasoning faculty. They attempted to teach him dancing and music, but in vain; he never could make any thing of music; and as for dancing, although he beat time with tolerable exactness, yet he could never remember the figure, but while his dancing-master stood by to direct his motions. Notwithstanding, a mind thus destitute of understanding was not without its passions; anger and jealousy harassed it at times; nor was he without desires of another nature.

At the age of sixteen, Baby was twenty-nine inches high; at this he rested; but having thus arrived at his acme, the alterations of puberty, or rather, perhaps, of old age, came fast upon him. From being very beautiful, the poor little creature now became quite deformed; his strength quite forsook him; his back bone began to bend; his head hung forward; his legs grew weak; one of his shoulders turned awry; and his nose grew disproportionably large. With his strength, his natural spirits also forsook him; and, by the time he was twenty, he was grown feeble, decrepid, and marked with the strongest impression of old age. It had been before remarked by some, that he would die of old age before he arrived at thirty; and, in fact, by the time he was twenty-two, he could scarcely walk a hundred paces, being worn with the multiplicity of his years, and bent under the burthen of protracted life. In this year he died; a cold, attended with a slight fever, threw him into a kind of lethargy, which had a few momentary intervals; but he could scarcely be brought to speak. However, it is asserted, that in the last five days of his life, he showed a clearer understanding than in his times of best health: but at length he died, after enduring great agonies, in the twenty-second year of his age.

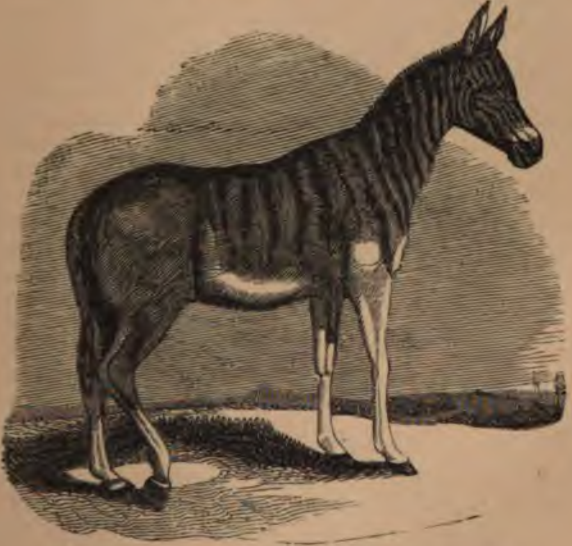
Baby, it is evident, was a creature calculated rather to excite pity or disgust than any other feeling: a being as stunted in mind as in body. But to these diminutive beings Nature does not always forget to give intellectual faculties. Jeffery Hudson, to whom Buffon alludes as the dwarf of the English court, was a brave and intelligent man. He killed, in a duel, Mr. Cutts, who had insulted him; and he served as a captain in the royal army. In modern times we have seen an instance of a dwarf possessed of every mental and personal accomplishment. Count Borulawski was the son of a Polish nobleman attached to the party of King Stanislaus, and who lost his property in consequence of that attachment. His father had six children, three dwarfs, and three of the ordinary stature; and it is a singular circumstance, that they were born alternately, a big and a little one. The count's youngest sister, who died at the age of twenty-three, was of a much more diminutive size than he was. He grew till he was thirty, when he was three feet two inches in height. The proportions of his figure were perfectly correct, which is rarely the case with dwarfs, and his look was manly and noble. His manners were full of grace and politeness; his temper was good; and he possessed a lively wit, united with an excellent memory and a sound judgment. Till the age of forty-one, he lived, in the enjoyment of perfect health, and of all the comforts of life under the patronage of a lady, who was a friend of the family. He then married a lady, of the middle size, by whom he had three children, none of whom were dwarfs To procure the means of subsistence for his family, he at first gave concerts in the principal cities of Germany; on which occasions he played upon the guitar, of which instrument he was a perfect master. At Vienna he was persuaded to turn his thoughts to England, where it was supposed that the public curiosity would in a little time benefit him sufficiently to enable him to live independent in a country so cheap as Poland. Borulawski accordingly visited England, where he was admired, and extensively patronized, by the nobility and gentry. He exhibited himself in London, Edinburgh, Dublin, Bath, and most of the principal cities and towns, and wherever he went he gained friends. Borulawski died a few years since. He published his own Memoirs.

Opposite to this accidental diminution of the human race, is that of its extraordinary magnitude. Concerning the reality of a nation of giants, there have been many disputes among the learned. Some have affirmed the probability of such a race; and others as warmly have denied the possibility of their existence. But it is not from any speculative reasonings, upon a subject of this kind, that information is to be obtained.

We have several accounts from mariners, that a nation of giants actually exists; and mere speculation should never induce us to doubt their veracity.

Ferdinand Magellan was the first who discovered this race of people along the coast, toward the extremity of South America. Magellan was a Portuguese of noble extraction, who having long behaved with great bravery, under Albuquerque, the conqueror of India, he was treated with neglect by the court, upon his return. Applying, therefore, to the king of Spain, he was intrusted with the command of five ships, to subdue the Molucca Islands; upon one of which he was slain. It was in his voyage thither, that he happened to winter in St. Julian's Bay, an American harbour, forty-nine degrees south of the line. In this desolate region, where nothing was seen but objects of terror, where neither trees nor verdure dressed the face of the country, they remained for some months without seeing any human creature. They had judged the country to be utterly uninhabitable; when one day they saw approaching, as if he had been dropped from the clouds, a man of enormous stature, dancing and singing, and putting dust upon his head, as they supposed in token of peace. This overture for friendship was, by Magellan's command, quickly answered by the rest of his men; and the giant approaching, testified every mark of astonishment and surprise. He was so tall, that the Spaniards only reached his waist; his face was broad, his colour brown, and painted over with a variety of tints; each cheek had the resemblance of a heart drawn upon it; his hair was approaching to whiteness; he was clothed in skins, and armed with a bow. Being treated with kindness, and dismissed with some trifling presents, he soon returned, with many more of the same stature; two of whom the mariners decoyed on ship-board: nothing could be more gentle than they were in the beginning; they considered the fetters that were preparing for them, as ornaments, and played with them, like children with their toys; but when they found for what purpose they were intended, they instantly exerted their amazing strength, and broke them in pieces with a very easy effort. This account, with a variety of other circumstances, has been confirmed by succeeding travellers: Herrera, Sebald Wert, Oliver Van Noort, and James le Maire, all correspond in affirming the fact, although they differ in many particulars of their respective descriptions.

ZEBRA. P. 140.



ZEBRA OF THE PLAINS, OR QUAGGA. P. 142.

The last voyager we have had, that has seen this enormous race, is Byron.*

This race of giants are described as possessed of great strength; and, no doubt, they must be very different from those accidental giants that are to be seen in different parts of Europe. Stature with these, seems rather their infirmity than their pride; and adds to their burthen, without increasing their strength. The generality, indeed, are ill formed and unhealthy; weak in their persons, incapable of exerting what strength they are possessed of. The same defects of understanding that attend those of suppressed stature, are found in those who are thus overgrown; they are heavy, phlegmatic, stupid, and inclined to sadness. The numbers, however, are but few; and it is thus kindly ordered by Providence, that as the middle state is the best fitted for happiness, so the middle ranks of mankind are produced in the greatest numbers.

To these varieties in the human species might be added a considerable catalogue of MONSTERS; but as few of these have survived the hour of their birth, and as the detail of most of them can serve but to disgust, we shall only trouble the reader with a few instances. The first is an affecting account of the most singular production of this kind that stands recorded in the History of Nature.

On the 26th of October, 1701, at Tzoni, in Hungary, two female children were born, which were united together at the loins. They lived to the age of twenty-one years. At seven years of age they were carried into Holland, England, Italy, Russia, and almost every country of Europe. At the age of nine they were purchased by a pious clergyman, in order to place them in a convent at Petersburgh, where they remained till the 25th of February, 1723, when they died.

One of these twins was named Helen, and the other Judith. Helen appeared first in the birth, as far as the navel, and three hours after she was completely extricated, along with Judith. Helen grew tall, and was straight. Judith was less, and a little crooked. As they were united at the loins, they could only see one another by turning their heads. There was only one anus in common to them both; but in other respects they appeared as two different women. They in general agreed well together, and loved each other affectionately. At six years of age Judith was affected with a palsy on the left side; and though afterward she appeared cured, she always retained a strong impression of that malady, and her mind was always heavy and weak. Helen, on the contrary, was handsome and gay. She had a good understanding, and some wit. They had the small-pox and the measels at the same time; but they had other maladies or indispositions separately: for Judith was subject to a cough and a fever; Helen on the contrary enjoyed good health. When they were nearly twenty-one years of age, Judith took a fever, fell into a lethargy, and died; the unfortunate Helen was obliged to follow her lot. Three minutes before the death of Judith, she fell into an agony, and died almost at the same moment. In dissecting them, it was found that the entrails of each were perfect, that each had even a distinct canal for the excrements; but which, nevertheless, met and united in the same anus.

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* The soberer narratives of recent travellers have reduced the stature of the Patagonians to a more reasonable standard; though still leaving them the character of being a tall race. From five feet ten to six feet seven inches appears to be the height of the individuals of this tribe.

Several instances of this phenomenon have occurred, and some of them are of recent date. One of them exists at the present moment. We shall notice but two of the number. The first of them was born at Coimbetore in the East Indies, in the month of October, 1804. The children were females. In October, 1807, one of them was thirty-four inches high, the other a quarter of an inch shorter. The heads of both were rather long, and the sides of each head much compressed; the features of each strongly resembled the other. The bodies were joined from the lower part of the breast bone to the navel, which was common to both. They were thus face to face, and could sleep in no other position. In walking they moved sideways, and sometimes circularly. They generally slept at the same time, but not always; and one would cry whilst the other did not. If the body of the one was pinched, the other did not appear to feel; but if the connecting part was pinched, both were sensible of pain. Medicine administered to one affected both. Both were healthy children, and not otherwise deformed. One was loquacious, the other talked very little; the liveliest was rather stouter than the other. Both had had the small-pox, at the same time, and favourably. In moving or looking different ways, or rather in directions contrary to their natural position, they crossed their hands and arms. They could walk up stairs, and were active when playing with other children. What became of this curiously joined pair we are not told.

A pair united in a similar manner is now exhibiting in the British metropolis. They, too, were born in the east, and are known as the Siamese youths. A fleshy band, of from four to six inches long, and two broad, proceeding from the pit of each stomach, connects them together. The entire band admits four fingers to pass freely behind it, when the boys stand shoulder to shoulder, and its width and thickness allow the thumb to meet the fingers on the front aspect. The vestiges of one common navel are visible at the lower and middle part of the band, and it is equidistant between the two bodies. The band is hollow, except about an inch in the centre, and there is evidently a hernial protrusion into it from each of the boys, in the action of coughing. Their appearance is healthy, their dispositions cheerful, and their attitudes and motions graceful. They move across the room with all the ease and grace of a couple skilfully waltzing, and seem never to have any difference of intention or purpose which can give pain to their band of union by making them draw different ways. The natural position of the youths, or that which seems to place the connecting ligament in its natural form, is that of face to face. This position, as must be obvious, is extremely inconvenient, and the boys have consequently accustomed themselves to stand or move side by side. Their persons are thus drawn mutually closer, which makes it necessary for one to place his arm about the neck or waist of the other. The position may be varied—that is, the ligament may be made an axis, upon which the youths can turn and bring in contact the two opposite sides, instead of those which were first in collision. Their identity of purpose and unity of movement, combined with a general similarity of tastes, dispositions, and habits, had created in some a suspicion that their organization was more intimately connected than at first sight appears. They eat, drink, and sleep simultaneously; their health is affected alike; and, on being conveyed through the streets in a coach, so perfect is their unity of *action*, that they could not be prevailed upon to look out of its opposite windows. These circumstances many have been disposed to attribute to something more than the power of habit; but there can be no doubt that the youths are perfectly distinct beings, having each his organization totally independent of each other. This is placed beyond a doubt by various circumstances. No one can fail to be touched with the perfect harmony that subsists between them. Attempts have been made to create jealousies between them, but without the slightest effect. Any gifts which they receive, capable of division, is shared between them; and any other description of present passes from one to the other as a joint possession. It would perhaps be more just to say, that they recognize no difference between themselves. A very attentive observer, however, will not fail to discover between these two boys, who certainly bear the strongest possible resemblance to each other, a marked distinction. One seems to be a little more robust than the other, and even to possess an intellectual superiority over his brother. Perhaps this notion acquires plausibility from the circumstance that the former generally acts as the organ of communication on the joint part with the interpreters. It is observed, that this superior brother yields on all occasions to the impulses of the weaker, giving up his own choice, and preferring the course intimated by the other. The inferior brother then playfully leans against his mate for support, or the one pats the cheek, or presses the forehead, or adjusts the shirt collar of the other, in such a way as betrays the kindliest feelings in each, and the tenderest affection for each other.

A still more wonderful *lusus naturæ* lately existed in the person of a bicephalous girl, born of Sardinian parents. She died recently at Paris. Ritta, or the right side of the infant, had been ill for three days, and her illness did not appear in any degree to influence the health of Christina, the other side; so that at the moment when Ritta had given up the ghost, Christina was hanging to the breast of her mother, and playing with her face. But suddenly she let go, heaved a sigh, and expired. On dissection, two hearts, touching at the upper surface, but perfectly free at the base, were found in one pericardium. There was only one liver, which was evidently formed by the juncture of two; but there were two stomachs, and two small intestines, the latter of which joined ten or twelve inches above the *cæcum*. The *cæcum* was single, and all below was the same. In the pectoral cavity there was only one diaphragm, which had evidently been formed out of those of two subjects.

CHAPTER VII.

Of Quadrupeds in general—Of domestic Animals—The Horse—The Ass—The Ox—The Sheep—The Goat—The Swine—Of the Wild Boar, &c.

If we descend, by regular gradations, from man to those classes of animals which approach nearest him in their nature and their habits, we must, on every account, assign the first rank to the quadruped part of creation; since whether we direct our attention to their form and structure, or to their manners and instincts, we shall find them more correspondent to our own than those of any other order of animated beings.

The general anatomy of the monkey tribe is so analogous to that of man, that it requires some skill in physiology to make the distinction; and even those quadrupeds which least resemble us, when they erect themselves in an upright position, still preserve striking marks of their affinity.

But, if we compare their internal structure with our own, the likeness will be found still to increase, and we shall perceive many advantages they enjoy in common with us, above the lower tribes of nature. Like us, they are placed above the class of birds, by bringing forth their young alive; like us, they are placed above the class of fishes, by breathing through the lungs; like us, they are placed above the class of insects, by having red blood circulating through their veins; and lastly, like us, they are different from almost all the other classes of animated nature, being either wholly or partly covered with hair. Thus nearly are we represented in point of conformation to the class of animals immediately below us; and this shows what little reason we have to be proud of our persons alone, to the perfection of which quadrupeds make such near approaches.

Even in the passions of man, nay, in the most amiable of the passions, we find some species of this class no contemptible rivals. What can equal the attachment of the dog to its master? Even over the grave that contained his dust has this animal been known to breathe its last. But (without meaning to quote the prodigies and the heroes of this, any more than of any other class) with what fidelity does it accompany, with what constancy does it follow, with what attention does it defend, its master? What eagerness to obtain his caresses! What docility in obeying him! What patience in suffering his bad humours, and his frequently unjust corrections! What mildness, and what humility, in its endeavours to be restored to favour! What emotion, what anxiety, what sorrow when he is absent! What joy when he returns! From all these circumstances, is it possible not to distinguish friendship? Even among ourselves, is it expressed in characters of superior energy?

The forms and instincts of animals are adapted to their situations. However proud man may superficially suppose the Sloth, that employs whole months in climbing up a tree, or the Mole, whose eyes are too small for distinct vision, to be wretched and helpless creatures, their life is probably a life of luxury to them, and, if abridged in one pleasure, it may be doubled in those that remain.

The heads of quadrupeds are in general calculated for their manner of living. In some it is sharp, in order to enable the animal to turn up the earth in which its food lies. In some it is long, in order to give room for the olfactory nerves, as in dogs, which hunt by the scent. In others it is short, as in the lion, to give it the greater strength and fit it the better for combat.

The teeth are also fitted to the nature of their food. In those which live upon flesh, they are sharp, and fitted for holding and dividing; in those which subsist on vegetable diet, they are calculated for pounding or grinding their aliment. Their legs also are equally adapted to the life they are intended to lead. The feet of some that live upon fishing are webbed and calculated for swimming. Animals of prey have their feet armed with claws, which some can sheathe and unsheathe at will.

The stomach is generally proportioned to the quality of the food. In those that live upon flesh, it is small and glandular. On the contrary, animals that live upon vegetables have the stomach very large; and those which chew the cud have no less than four stomachs, though in Africa, where the plants are soft and nutritious, some of this class have only two.

The most obvious distinction in quadrupeds is between those which are domestic, or which man has found easy to reduce to a state of dependence on him, and to retain in it; and the wild, or those which continue in their native savage state. Many different kinds of classification have been proposed by speculative naturalists; but in an order of beings which contains so small a number of distinct species, scientific arrangements serve rather to confuse than to instruct.

The number of species, in the quadruped class, which may be said to have distinct marks or characters, is usually stated at two hundred; though late authors have enumerated two hundred and eighty, and even some minute philosophers have subdivided them into upward of four hundred.

THE HORSE.

THE noblest conquest which was ever made by man is that of this spirited and haughty animal, which shares with him the fatigues of war and the glory of the combat. Equally intrepid as his master, the Horse sees the danger, and braves it; inspired at the clash of arms, he loves it, he seeks it, and is animated with the same ardour.* He feels pleasure also in the chase, in tournaments, in the course; he is all fire, but, equally tractable as courageous, does not give way to his impetuosity, and knows how to check his inclinations; he not only submits to the arm which guides him, but even seems to consult the desires of his rider; and, always obedient to the impressions which he receives from him, presses on, moves gently, or stops, and only acts as his rider pleases. The Horse is a creature which renounces his being, to exist only by the will of another, which he knows how to anticipate, and even express, and execute by the promptitude and exactness of his movements: he feels as much as we desire, does only what we wish, giving himself up without reserve, and refuses nothing, makes use of all his strength, exerts himself beyond it, and even dies the better to obey us.

Such is the Horse, whose natural qualities art has improved. His education commences with the loss of his liberty, and by constraint it is finished. The slavery or servitude of these creatures is universal, and so ancient that we rarely see them in their natural state: they are never wholly free from all their bands, not even at the time of rest; and if they are sometimes suffered to range at liberty in the fields, they always bear about them tokens of servitude, and frequently the cruel marks of servitude and of pain: the mouth is deformed by the wrinkles occasioned by the bit, the flanks scarred with wounds inflicted by the spur, the hoofs are pierced by nails, the attitude of the body constrained, from the subsisting impression of habitual shackles, from which they would be delivered in vain, as they would not be the more at liberty for it. Even those whose slavery is the most gentle, who are only fed and broken for luxury and magnificence, and whose golden chain serve less to decorate them, than to satisfy the vanity of their master, are still more dishonoured by the elegance of their trappings, by the tresses of their manes, by the gold and silk with which they are covered, than by the iron shoes on their feet.

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* This is more poetic than correct. The Horse, on the contrary, is naturally timid, and dislikes noise and fire. It is by the fear of chastisement, and by the force of habit, that he is brought to face danger. "If Buffon," says Bory St. Vincent, "had ever commanded cavalry in action, he would not have written that the Horse *sees* danger and *braves* it."—ED

Nature is more delightful than art; and, in an animated being, the freedom of its movements makes nature beautiful: observe the Horses in Spanish America, which live wild; their gait, their running, or their leaping, seem neither constrained or regular. Proud of their independence, they fly the presence of man, and disdain his care; they seek and find for themselves proper nourishment; they wander about in liberty in immense meads, where they feed on the fresh productions of an eternal spring: destitute of any fixed habitation, without any other shelter than a mild sky, they breathe a purer air than those which are confined in vaulted palaces. These wild Horses are also much stronger, much swifter, and more nervous than the greater part of domestic Horses; they have, what nature has bestowed upon them, strength and nobleness; the others only what art can give, beauty and cunning[*].

The natural disposition of these animals is not ferocious, they are only high spirited and wild; and though superior in strength to the greatest part of animals, they yet never attack them; and if they are attacked by others, either disdain them or trample them under their feet. They go also in bodies, and unite themselves into troops, merely for the pleasure of being together, for they are not fearful of, but have an attachment to each other. As herbs and vegetables are sufficient for their nourishment, they have quite enough to satisfy their appetite; and as they have no relish for the flesh of animals, they never make war with them, nor with each other; they never quarrel about their food, they have no occasion to ravish the prey of another, the ordinary source of contentions and quarrels among carnivorous animals. They live in peace because their appetite is simple and moderate; and as they have enough, there is no room for envy.

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[*] Here, again, Buffon is at variance with the fact. "Wild Horses," says a recent writer, "are smaller, weaker, and more timid, than domesticated Horses; their heads are clumsy, large, ignoble, with great ears, which prove their near relationship to the rustic ass; their hair, too, is long, harsh, or frizzled."—Ed.

As all parts of Europe are at present peopled, and almost equally inhabited, wild Horses are no longer found there; and those which we see in America were originally European tame Horses, which have multiplied in the vast deserts of that country. The astonishment and fear which the inhabitants of Mexico and Peru expressed at the sight of Horses and their riders, convinced the Spaniards that this animal was entirely unknown in these countries; they therefore carried thither a great number, as well for service and their particular utility as to propagate the breed. M. de la Salle, in 1685, saw in the northern parts of America, near the bay of St. Louis, whole troops of these wild Horses feeding in the pastures, which were so fierce that no one dared to approach them. The author of the History of the Adventures of the Buccaneers, says that, in the island of St. Domingo, Horses may sometimes be seen in troops of upward of five hundred, all running together, and that as soon as they see a man, they will all stop; that one of them will approach to a certain distance, snort, take flight, and then all the rest will follow him. To catch them, they make use of nooses made of ropes, which they spread and hang in places which they know they frequent: but if they are caught by the neck they strangle themselves, unless the hunter comes time enough to their assistance, who instantly secures them by the body and legs, and fastens them to trees, where they are left for two days without either food or drink. This experiment is sufficient to begin to make them tractable, and in time they become as much so as if they had never been wild; and even if by chance they ever regain their liberty, they never become so again, but know their masters, and suffer them to catch them again without trouble.

The manners of these animals almost wholly depend on their education. From time immemorial it has been the custom to separate the Colts from their mothers: Mares are suffered to suckle them five, six, or seven months; for experience has taught us, that those Colts which are suckled ten or eleven months, are not of equal value with those which are weaned sooner, though they are generally fuller of flesh. After six or seven months sucking, they are weaned, that they may take more solid nourishment than milk; bran is then given them twice a day, and a little hay, of which the quantity is increased in proportion as they advance in age, and they are kept in the stable as long as they seem to retain any desire to return to the Mare; but when this desire ceases, they are suffered to go out in fine weather, and led to pasture; but care must be taken not to suffer them to go out to pasture fasting; they must have bran, and be made to drink, an hour before they are suffered to graze, and are never to be exposed to great cold or rain: in this manner they spend the first winter; in the May following, they are not only permitted to graze every day, but are suffered to lie in the fields all the summer, and even to the end of October, only observing not to let them eat the after-grass; for if they accustom themselves much to it, they will grow disgusted with hay, which ought, however, to be their principal food during the second winter, together with bran mixed with barley, or oats wetted. They are managed in this manner, letting them graze in the daytime during winter, and in the night also during the summer, till they are four years old, when they are taken from the pastures, and fed on hay. This change in his food requires some precaution; for the first eight days, the Colt should have nothing but straw, and it is proper to administer some vermifuge drinks, as worms may have been generated from indigestion, and green food.

Great attention must be paid in weaning young Colts, to put them into a proper stable, not too hot, for fear of making them too delicate and sensible to the impressions of the air. They should frequently have fresh litter, and be kept very clean, by rubbing them down with a wisp of straw. But they should not be tied up and curried till they are two years and a half or three years old: this currying gives them great pain, their skin being as yet too delicate to bear it, and they would fall away instead of growing fat from it; care must also be taken that the rack and manger are not too high, the necessity of raising their heads too high in order to reach their food may possibly produce a habit of carrying it in this fashion, which would give them an awkward appearance.

At the age of three years, or three years and a half, the rider should begin to break them and make them tractable; they should at first have a light easy saddle, and ought to wear it two or three hours every day; and they should be accustomed to have a snaffle bit in their mouths, and to lift up their feet, on which they should sometimes receive rather smart strokes, and if designed for coach or draught horses, should wear harness and a bridle. At first a curb should not be used, they should be held by a caveson or leather strap, and be made to trot, on even ground, without a rider, and with only the saddle or harness on the body; and when the saddle Horse turns easily, and willingly follows the person who holds the leather strap, the rough-rider should mount him and dismount again in the same place, without making him move, till he is four years old, because, before that age, the weight of a man overloads him, but at four years he should be made to walk or trot, a little way at a time, with the rider on his back. When a coach Horse is accustomed to the harness, he should be paired with a horse that is thoroughly broken, putting on him a bridle, with a strap passed through it, till he begins to be used to the draught; after this the coachman must teach him to back, having the assistance of a man before, who must push him gently back, and even give him some blows to make him do it: all this should be done before young Horses have changed their food, for when once they are what is called corn-fed, that is, when they feed on grain and hay, as they are more vigorous, it is remarked also that they are less tractable, and more difficult to break.

The bit and the spur are two means made use of to bring them into order. The mouth does not appear formed by nature to receive any other impressions than that of taste and appetite; there is, however, so great a sensibility in the mouth of a Horse, that, in preference to the eyes and ears, we address ourselves to it, to make him understand our pleasure; the smallest motion or pressure of the bit is sufficient to inform and determine the animal; and this organ of sense has no other fault than its perfection. This too great sensibility must be managed, for if it is abused, the mouth of the Horse is spoiled, and rendered insensible to the impression of the bit; the senses of sight and hearing are not subject to such a change, and could not be dulled in this manner; but it has been found convenient to govern Horses by these organs, and it is generally true, that signs given by the sense of feeling have more effect on animals in general than those conveyed to the eyes or ears; besides, the situation of Horses with relation to those who mount or conduct them, makes their eyes almost useless for this purpose, because they see only straight forward, so that they could only perceive the signs made to them when they turned their heads round; and although they are frequently conducted and animated by the ear, yet in fact, if they are well broken, the smallest pressure of the thighs, or most trifling motion of the bit, is sufficient to direct them; the spur is even useless, or at least it is only made use of to force them to violent motions; and as, through the folly of the rider, it often happens that in giving the spur he checks the bridle, the Horse, finding himself excited on one side, and kept in on the other, only prances and capers, without stirring out of his place.

By means of the bridle we teach Horses to hold up their heads, and place them in a proper manner, and the smallest sign or movement of the rider is sufficient to make the Horse show all his different paces; the most natural is perhaps the trot, but ambling and galloping are more pleasant for the rider, and these are the two paces we particularly endeavour to improve.

Though walking is the slowest of all their paces, a Horse should, notwithstanding, step quick, and neither take too long nor too short steps; his carriage should be easy; this ease depends much on the liberty of his shoulders, and is known by the manner in which he carries his head in walking; if he keeps it high and steady, he is generally vigorous, quick, and free in his motions. When the motion of the shoulders is not free, the leg does not rise enough, and the Horse is apt to stumble, and strike his foot against the inequalities of the ground; and when the shoulders are still more confined in their action, and the motion of the legs appears free, the Horse is soon fatigued, stumbles, and becomes useless. A Horse should raise his shoulders and his lower haunches in walking; he should also support his leg, and raise it high enough; but if he keeps it up too long, or lets it fall too slowly, he loses all the advantage of his suppleness, becomes heavy, and fit for nothing but to match with another, and for show.

It is not sufficient that his walk should be easy, his steps must be also equal and uniform both behind and before, for if his buttocks have a swinging motion whilst he keeps up his shoulders, the rider is much jolted, which is very uneasy to him: the same thing happens when the Horse extends his hind leg too much, and rests it almost in the same place in which he rested his fore foot. Horses with short bodies are subject to this fault: those which cross their legs or strike them against each other, are not sure-footed; and those whose bodies are long, are the most easy for the rider, because he is at a greater distance from the two centres of motion, the shoulders and haunches, and is therefore less sensible of the motion and jolting.

The usual method of walking among quadrupeds is, to lift up at the same time one of the fore and one of the hind legs; whilst the right fore leg is in motion, the left hind leg follows and advances at the same time, and this step being made, the left fore leg conjointly with the right hind leg in its turn, and so on. As their bodies are supported upon four points, which form a long square, the easiest manner of moving for them, is to change two of them at once on a diagonal line, in such a manner that the centre of gravity of the body of the animal may move but little, and rest always in the direction of the two points which are not in motion; in the three natural paces of the Horse, the walk, the trot, and the gallop, this rule of motion is always observed, but with some difference. In the walk, there are four times in the movement; if the right fore leg moves first, the left hind leg follows the moment after, then the left fore leg moves forward in turn, to be followed the instant after by the right hind leg; thus the right fore foot rests on the ground first, the left hind foot next, then the left fore foot rests, and lastly, the right hind foot, which makes a movement of four times. In the trot there are but two times in the movement; if the right fore leg goes off first, the left hind leg moves at the same time, and without any interval between the motion of the one and the motion of the other; also the left fore leg moves at the same time with the right hind one.

In the gallop there are usually three times; but as in this movement there is a kind of leaping, the interior parts of the horse do not move of themselves, but are driven away by the strength of the haunches and the hinder parts: thus, of the two fore legs, the right ought to advance more forward than the left; the left ought beforehand to rest on the ground to serve as a point of rest for the sudden jerk which he takes: thus it is the left hind foot that makes the first time of the movement, and which rests on the ground first; then the right hind leg is lifted up conjointly with the left fore leg, and they rest on the ground together: at length, the right fore leg (which is raised an instant after the left fore leg and right hind one) rests on the ground last, which makes the third time: thus in this movement of the gallop, there are three times and two intervals; and in the first of these intervals, when the movement is made with haste, there is an instant when the four legs are in the air at the same time, and when the four shoes of the Horse may be seen at once. When the Horse has the haunches and the houghs supple, and moves them with quickness and agility, the movement of the gallop is more perfect, and the cadence is made in four times: he then rests the left hind foot, which shows the first time; then the right hind foot falls to the ground, and shows the second time; the left fore foot falls a moment after, showing the third time; and at length the right fore foot, which rests last, shows the fourth time.

Horses usually gallop on the right foot, in the same manner as they carry the fore right leg in walking and trotting; they also throw up dirt in galloping with the right fore leg, which is more advanced than the left; and also the right hind leg which follows immediately the right fore one, is more advanced than the left hind leg, and that the whole time that the Horse continues to gallop: whence it results, that the left leg which supports all the weight, and which forces forward the others, is more tired; for this reason it would be right to exercise Horses in galloping alternately on the left foot, as well as on the right; and they would consequently bear much longer this violent motion.

In walking, the legs of the Horse are lifted up only a small height, and the feet almost touch the ground; in trotting they are raised higher, and the feet are entirely free from the ground; in galloping the legs are lifted up still higher, and the feet seem to rebound from the earth. The walk to be good should be quick, easy, light, and sure; the trot should be firm, quick, and equally sustained; the hind foot ought to follow well the fore foot; the Horse in this pace should carry his head high, and his back straight; for, if the haunches rise and fall alternately at each trot he takes, if the crupper moves up and down, and the Horse rocks himself, he trots ill through weakness; if he throws out wildly his fore legs, it is another fault: the fore legs should tread in a line with the hind ones, which should always efface their tracks. When one of the hind legs is thrown forward, if the fore leg of the same side remain in its place too long, the motion becomes more uneasy and difficult from this resistance; and it is for this reason that the interval between the two times of the trot should be short; but, be it ever so short, this resistance is sufficient to make this pace more uneasy than walking and galloping, because in walking the motion is more easy, gentle, and the resistance less; and in galloping there is scarcely any horizontal resistance, which is the only one inconvenient for the rider.

Walking, trotting, and galloping, are the most usual natural paces; but some Horses have another natural pace, called the amble, which is very different from the three others, and at the first glance of the eye appears contrary to the laws of mechanics, and extremely fatiguing to the animal, though the quickness of motion is not so great as in galloping, or trotting hard. In this pace the foot of the Horse grazes the ground still more than in walking, and each step is much longer. But the most remarkable circumstance is, that the two legs on the same side set off at the same time to make a step, and afterward the two other legs move at the same time to make another, so that each side of the body alternately is without support, and there is no equilibrium maintained between the one and the other; it is therefore only from his almost grazing the earth, and the quick alternate motion, that he can support himself in this pace. There is in the amble, as well as the trot, but two times in the motion, and all the difference is, that in the trot the two legs which go together are opposite, in a diagonal line: instead of which, in the amble, the two legs on the same side go together: this pace is very easy for the rider, as it has not the jolting of the trot, which is occasioned from the resistance the fore leg meets with when the hind leg rises; because, in the amble the fore leg rises at the same time with the hind leg on the same side, instead of which, in trotting the fore leg on the same side rests and assists the impulse during the whole time that the hind leg is in motion.

The Horse, of all animals, is that which, with great stature, has the most complete proportion and elegance in every part of his body; and compared with every other animal he appears superior in these respects. The great length of the jaws is the principal cause of the difference between the heads of quadrupeds and of the human species: it is, also, the most ignoble mark of all; yet, though the jaws of the Horse are very long, he has not, like the ass, an air of imbecility, or of stupidity, like the ox. The regularity of the proportions of his head, on the contrary, gives him an air of sprightliness, which is well supplied by the beauty of his chest. The Horse seems desirous of raising himself above his state of a quadruped, by holding up his head, and in this noble attitude he looks man in the face; his eyes are lively and large, his ears well made, and of a just proportion, without being short like those of the bull, or too long like those of the ass; his mane suits well his head, ornaments his neck, and gives him an air of strength and haughtiness; his long bushy tail covers and terminates advantageously the extremities of his body, far different from the short tails of the stag, the elephant, &c. and the naked tails of the ass, the camel, the rhinoceros, &c. The tail of the Horse is formed of long, thick hair, which seems to come from the rump, because the stump from which it grows is very short; he cannot raise his tail like the lion, but it suits him better hanging down, as he can move it sideways; it is very useful to him to drive away the flies which incommode him: for though his skin is very hard, and is every where furnished with a close thick coat, it is, notwithstanding, extremely sensible.

The head of a well proportioned Horse should be lean and small, without being too long; the ears at a moderate distance, small, straight, immoveable, narrow, thin, and well placed on the top of the head; the forehead narrow, and a little convex; the hollows filled up; the eyelids thin, the eyes clear, lively, full of fire, rather large, and projecting from the head, the pupil large; the nether jaw thin; the nose a little aquiline, the nostrils large and open, the partition of the nose, and the lips, thin; the mouth of a moderate width; the withers raised and sloping; the shoulders thin, flat, and not confined; the back equal, even, and insensibly arched lengthways, and raised on each side of the spine, which should appear indented; the flanks full and short; the rump round and fleshy; the haunches well covered with hair; the stump of the tail thick and firm; the fore legs and thighs thick and fleshy, the knee round before, the houghs large and rounded, the sinew loose, the joint next the foot small, the fetlock not thickly covered with hair, the pastern large, and of a middling length, the coronet rather raised, the hoof black, smooth, shining, and high, the quarters round, the heels wide and moderately raised, the frog small and thin, and the sole thick and hollow.

But there are few Horses in which this assemblage of perfection is to be found; the eyes are subject to many complaints, which are sometimes difficult to be known. In a healthy eye we ought to see through the cornea two or three spots of the colour of soot, above the pupil: to see these spots the cornea must be clear, clean, and transparent; if it appears double, or of a bad colour, the eye is not good: a small, long, and straight pupil, encompassed with a white circle, is also a bad sign; and when it is of a bluish green colour, the eye is certainly bad and the sight dull.

It is very easy to judge of the natural and actual state of the animal by the motion of his ears; when he walks, he should project forward the points of his ears; a jaded Horse carries his ears low; those which are spirited and mischievous, alternately carry one of their ears forward and one backward; they all carry their ears on that side from which they hear any noise, and when any one strikes them on the back, or on the rump, they turn their ears back. Horses which have the eyes deep sunk in the head, or one smaller than the other, have usually a bad sight; those which have the mouth dry, are not of so healthy a temperament as those which have the mouth moist, and make the bridle frothy. A saddle Horse ought to have the shoulders flat, moveable, and not very fleshy; the draught Horse, on the contrary, should have them flat, round, and brawny: if, notwithstanding, the shoulders of a saddle Horse are too thin, and the bones show themselves through the skin, it is a defect which shows the shoulders are not free, and consequently the Horse cannot bear f tigue. Another fault of a saddle Horse is, to have the chest project too forward, and the fore legs drawn too much back, because he is apt to rest on the hand in galloping and even to stumble and fall: the length of the legs should be proportionable to the height of the Horse; when the fore legs are too long he is not sure footed, if they are too short, he is too heavy in the hand: it is a remark that Mares are more liable than Horses to be short legged, and that Horses in general have the legs thicker than Mares or Geldings.

One of the most important things to be known is, the age of the Horse: it is from the teeth that we obtain the most certain knowledge of their age; the Horse has forty; twenty-four grinders, four eye teeth, and twelve incisive teeth: Mares have no eye teeth, or if they have them they are very short: the grinders are not instrumental to the knowledge of their age, we form our judgment from the front and eye teeth. The twelve front teeth begin to show themselves fifteen days after the birth of the foal; these first teeth are round, short, not strong, and drop out at different times, in order to make room for others: at two years and a half the four front middle teeth drop out the first, two at top, and two at bottom; a year after four others fall out, one on each side of those which are already replaced; at about four years and a half, four others drop out, always on the side of those which have been replaced, these four last milk teeth are replaced by four others, which do not grow near so fast as those which replaced the first eight; and these four last teeth which are called the wedges, and which replace the four last milk teeth, are those by which we know the age of a Horse; these are easily known, since they are the third as well at top as at bottom, beginning to count from the middle to the extremity of the jaw; these teeth are hollow and have a black mark in their concavity: at four years and a half, or five years old, they scarcely project beyond the gums, and the hollow is plainly seen; at six years and a half it begins to fill up, the mark also begins to diminish and grow narrower, and so continues till seven years and a half or eight years, when the hollow is entirely filled up and the black mark effaced: after the animal has attained eight years, as these teeth do not give further information of the age, we generally judge by the eye teeth or tusks; these four teeth are placed at the side of those which I have just now been speaking of; the eye teeth, as well as the grinders, are not preceded by others which fall out, those of the inferior jaw usually come out first at three years and a half, and the two of the upper jaw at four years, and till they are six years old they are very sharp; at ten years old the upper ones appear already blunt, worn, and long, because they are bare, the gum wearing away with age, and the more they are worn away the more aged the horse is: from ten till thirteen or fourteen years, there is hardly any indication of the age, but then some hairs on the eyebrows begin to grow white; but this indication is equivocal, since it has been remarked that Horses engendered from old stallions and old mares have the hair white on the eyebrows at ten years old. There are also Horses whose teeth are so hard that they do not wear, and upon which the black mark subsists, and is never effaced; and others which have the mark in the mouth as long as they live. We may also know, though with less precision, the age of a Horse by the ridges of the palate, which are effaced in proportion to his age.

It has been remarked, that studs situated in dry and light countries produce good tempered, swift, and vigorous Horses, with nervous legs and hard hoofs; while on the other hand, those which are bred in damp places, and in fat pasturage, have generally the head large and heavy, the legs thick, the hoofs soft, and the feet flat. This difference arises from the climate and food, which may be easily understood; but, what is more difficult to be comprehended, and what is still more essential than any thing that has been said, is, the necessity of always crossing or mixing the breed, if we would prevent their degenerating.

Mares usually go with foal eleven months and some days; they will breed commonly to the age of fourteen or fifteen years, and the more vigorous longer than eighteen years.

The duration of the life of Horses is like that of every other species of animals, in proportion to the time of their growth. Man, who is above fourteen years in growing, lives six or seven times as long, that is to say, ninety or a hundred years. The Horse, who attains his full growth in four years, lives six or seven times as long, that is to say, twenty-five or thirty years. There are so few examples to contradict this rule, that we should not even regard them as exceptions from which we may draw any precedents; and as robust Horses are at their entire growth in less time than delicate ones, they also live less time, and at fifteen years of age are old.

The Arabian Horses are the handsomest known in Europe, they are larger and plumper than those of Barbary, and equally well shaped, but as they are not often brought into this country, riding-masters are not able to give an exact account of their perfections and defects.

The Horses of Barbary are more common; they are frequently negligent in their paces, and must be often reminded: they are very swift and strong, very light, and very fit for hunting. These Horses seem the most proper to breed from; it is only to be wished that they were of larger stature, as they seldom exceed four feet eight inches high.

The Turkish Horses are not so well proportioned as those of Barbary: they will, however, travel a great way, and are long winded: this is not surprising, if we do but consider, that in warm countries, the bones of animals are harder than in cold climates; and it is for this reason, that they have more strength in the legs.

The Spanish Horses hold the second rank after those of Barbary; those of a handsome breed are plump, well coated, and low of stature; they also use much motion in their carriage, and have great suppleness, spirit, and pride; their hair is usually black, or of a bay chestnut colour, though there are some of all colours, and it is but seldom that they have white legs and noses. The Spaniards, who have an aversion to these marks, never breed from Horses that have them, choosing only a star in the forehead.

The handsomest English Horses have in their conformation great resemblance to those of Arabia and Barbary, from which, in fact, they are bred; they are frequently five feet high, and above; they are of all colours, and have all kinds of marks; they are generally strong, vigorous, bold, capable of great fatigue, and excellent for hunting and coursing.

The Horses of Italy were formerly much handsomer than they are at present, because the breed for some time has been neglected, notwithstanding there are still some handsome Neapolitan Horses, especially draught Horses; but, in general, they have the head large, and the chest thick; they are also untractable. These defects, however are compensated by their noble form, their stateliness, and the beauty of their motions.

The Danish Horses are so handsome in their form, and so beautiful in their coats, that they are preferred to all others for putting into carriages; they are of all colours, and even of some singular ones, as pied; and Horses spotted like tigers are found no where but in Denmark.

In Germany we meet with very handsome Horses; but they are generally heavy and short breathed. The Hussars and Hungarians split their nostrils, with a view, they say, of giving them more breath, and also to hinder their neighing in battle. The Flemish Horses are greatly inferior to those of Holland: they have almost all large heads, flat feet, and are subject to humours in the eyes; and these two last are essential defects in coach Horses.

According to Marmol, the Arabian Horses are descended from the wild Horses in the deserts of Arabia, of which, in ancient times, large studs were formed, which have multiplied so much, that all Asia and Africa are full of them: they are so swift, that some will outstrip the very ostriches in their course. The Arabians of the desert, and the people of Libya, breed a great number of these Horses for hunting, but neither use them in travelling nor in their wars they send them to pasture whilst there is grass for them, and when that fails they feed them only with dates and camel's milk, which make them nervous, nimble, and lean. They lay snares for the wild Horses, and eat the flesh of the young ones, which they affirm is very delicate food. These wild Horses are smaller than the tame ones, and are commonly ash-coloured, though there are also some white ones, and the mane and the hair of the tail is short and frizzled.

Let an Arabian be ever so poor, he has Horses. They usually mount the Mares, experience having taught them that they bear fatigue, hunger, and thirst, better than Horses; they are also less vicious. They use them so much to be together, that they will remain so in great numbers for days together, left to themselves, without doing the least harm to each other. The Turks, on the contrary, do not approve of Mares; and the Arabians sell them the Horses which they do not keep for stallions. They have long preserved, with great care, the breed of their tary; there are also found some handsome Horses in the Ukraine, Walachia, Poland and Sweden; but we have no particular account of their qualities and defects.

When the Horse is impassioned with love, desire, or appetite, he shows his teeth, and seems to laugh; he shows them also when he is angry, and would bite; he sometimes puts out his tongue to lick, but less frequently than the ox, who licks much more than the Horse, and who, notwithstanding, is less sensible to caresses.

The Horse also remembers ill treatment much longer, and is sooner rebuffed than the ox; his natural spirit and courage are such, that, when he finds more is expected from him than he is able to perform, he grows angry, and will not endeavour; instead of which, the ox, who is slow and idle, exerts himself, and is more easily tired. That they are capable of feeling resentment is proved by a curious circumstance. A baronet, who was in possession of a hunter which seemed to be untirable, resolved to try if he could not completely fatigue him. After a long chase, he dined, mounted him again, and rode him furiously among the hills, till the animal was so exhausted that he reached the stable with infinite difficulty. More humane than his worthless master, the groom shed tears to see the state of the animal. Shortly afterward, on the baronet entering the stable, the Horse furiously sprung at him, and he would have perished had he not been rescued by the groom.

The Horse sleeps much less than man; for when he is in health, he does not rest more than two or three hours together; he then gets up to eat; and when he has been too much fatigued, he lies down a second time, after having eaten; but, on the whole, he does not sleep more than three or four hours in the twenty-four. There are even some Horses who never lie down, but sleep standing. It has been also remarked, that Geldings sleep oftener and longer than Horses.

The swiftness and strength of the Horse are wonderful. Childers, the race Horse, has been known to pass over eighty-two feet and a half in a second. Others have trotted more than twenty-one miles in an hour. There have been mill horses, which, at one load, have carried thirteen measures, or nine hundred pounds weight, of corn.

Quadrupeds do not all drink in the same manner, though they are all equally obliged to seek with the head for the liquor, which they cannot get any other way, excepting the of the desert was possessed only of a Mare, which the French consul at Said was desirous to purchase, that he might send her as a present to Louis XIV. The Arab hesitated long, but want drove him to consent, on condition of receiving a large sum, which he himself named. The Arab, clothed in his rags, brought his courser to the consul, dismounted, looked first at the tempting gold, and then steadfastly at his mare. But here his heart failed him. He heaved a deep sigh, and fondly exclaimed, "To whom am I going to give thee up? to Europeans! who will tie thee close, who will beat thee, who will render thee miserable! Return with me, my beauty! my jewel! and rejoice the hearts of my children." Then, springing on the back of the animal, he was out of sight in a moment.

The breed of these Horses is dispersed in Barbary, among the Moors, and even among the Negroes of the river Gambia and Senegal; the lords of the country have some which are of uncommon beauty. Instead of barley or oats they give them maize reduced to flour, which they mix with milk, when they are inclined to fatten them; and in this hot climate they seldom let them drink.

The Tartars live with their Horses nearly in the same manner as the Arabians do. When they are about seven or eight months old the young children mount them, and make them walk and gallop a little way by turns; they thus break them by degrees, and oblige them to undergo long fastings; but they never mount them for racing or hunting till they are six or seven years old, and then make them support incredible fatigue, such as travelling two or three days together without stopping, passing four or five days without any other food than a handful of grass every eight hours, and also inure them to go twenty-four hours without drinking. These Horses, which appear, and which are in reality, so robust in their own country, become enfeebled, and are soon good for nothing, when transported to China or the Indies; but they succeed better in Persia and Turkey. In Lesser Tartary they have also a breed of small Horses, which are in such estimation that they are not allowed to sell them to foreigners. These Horses have all the good and bad qualities of those of Great Tartary, which shows how much the same manners, and the same education, give the same disposition to these animals. There are also in Circassia, and in Mingrelia, many Horses which are even handsomer than those of Tartary; there are also found some handsome Horses in the Ukraine, Walachia, Poland and Sweden; but we have no particular account of their qualities and defects.

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Quadrupeds do not all drink in the same manner, though they are all equally obliged to seek with the head for the liquor, which they cannot get any other way, excepting the monkey, and some others that have hands, and consequently drink like men, when a vase or glass is given them which they can hold; for they carry it to their mouths, inclining the head, throwing down the liquor, and swallowing it by the simple motion of deglutition. Man usually drinks in the same manner, because it is the most convenient. Most quadrupeds also choose that mode which is most agreeable to them, and constantly follow it. The dog, whose mouth is very large, and the tongue long and thin, drinks lapping; that is, by licking the liquor, and forming with the tongue a kind of cup or scoop, which fills each time with a tolerable quantity of liquor; and this mode he prefers to that of wetting the nose. The Horse, on the contrary, whose mouth is small, and whose tongue is too short and thick to scoop it up, and who always drinks with more avidity than he eats, dips the mouth and nose quickly and deeply into the water, which he swallows largely by the simple motion of deglutition; but this forces him to drink without fetching his breath; whilst the dog breathes at his ease while he is drinking. Horses therefore should be suffered to take several draughts, especially after running, when respiration is short and quick. They should not be suffered to drink the water too cold, because that, independently of the colic, which cold water frequently occasions, it sometimes happens also, from the necessity they are in of dipping the nose into the water, that they catch cold, which often lays the foundation of a disorder called the glanders, the most formidable of all to that species of animal; for it is known, that the seat of the glanders is in the pituitary membrane, and that it is consequently a real cold, which causes an inflammation in this membrane; and travellers who give us a detail of the maladies of Horses in warm climates, as in Arabia, Persia, and Barbary, do not say that the glanders are so frequent there as in cold climates. It is from this that the conjecture arises, that this malady is occasioned by the coldness of the water, because these animals are obliged to dip and keep the nose and nostrils a considerable time under water, which would be prevented by never giving it to them cold, and by always wiping the nostrils after they have drank. Asses, who fear the cold more than Horses, and who resemble them more strongly in the interior structure, are notwithstanding, not so subject to the glanders; which may possibly happen from their drinking in a different manner from Horses; for instead of dipping the mouth and nose deeply into the water, they scarcely touch it with their lips.

I shall not speak of the other diseases of Horses; it would extend this Natural History too much to join to the history of an animal that of its disorders; nevertheless, I cannot leave the history of the Horse, without regretting that the health of this useful animal should have been hitherto abandoned to the care, and too frequently absurd practice, of ignorant people. The branch of physic which the ancients called Veterinarian, is at present scarcely known but by name. Were some physician to direct his views this way, and make this study his principal object, he would soon find it answer his purpose, both with respect to reputation and profit. Instead of degrading himself, he would render his name illustrious; and this branch of physic would not be so conjectural and difficult as the other. All causes being more simple in animals than in man, the diseases ought also to be less complicated, and consequently more easily to be guessed at, and treated with more success, without mentioning the entire liberty he would have of making experiments and finding out new remedies, and the ability of arriving without fear or reproach at a great extent of knowledge of this kind, from which, by analogy, might also be drawn inferences useful to the art of curing mankind. Among the brutal acts which are committed upon Horses, may be reckoned the absurd and inhuman practices of docking and nicking their tails, and applying the shoe red hot to the sole of the foot.

THE ASS

If we consider this animal with some degree of attention, he appears only to be a horse degenerated. The perfect similitude in the conformation of the internal parts, and the great resemblance of the body, legs, feet, and the entire skeleton, is a sufficient foundation for this opinion; we may also attribute the slight differences which are found between these two animals, to the influence of the climate, food, and the fortuitous succession of many generations of small wild horses, half degenerated, which, by little and little, have still continued degenerating, and have at last produced a new and fixed species; or rather a succession of individuals alike, al' vitiated in the same manner, sufficiently differing from a horse, to be looked upon as another species

What appears to favour this notion is, that as horses vary much more than Asses in the colour of their skin, they are consequently more anciently domestic, since all domestic animals vary much more in their colour than wild ones of the same species; that the greater number of wild horses, of which travellers speak, are small in their size, and have, like Asses, the coat gray, and the tail naked and frizzled at the end; and, that there are wild horses, and even domestic ones, which have a black stripe on the back, and other marks, which nearly resemble both wild and domestic Asses.

Again, if we consider the difference of the temperament, disposition, and manners; in a word, the organism of these two animals, and above all, the impossibility of mixing the breed to make one common species, or even an intermediate species which may be renewed; it appears a better founded opinion, that these animals are of a species equally ancient, and originally as essentially different as they are at present; as the Ass differs materially from the horse, in the smallness of the size, largeness of the head, length of the ears, hardness of the skin, nakedness of the tail, the form of the rump, and also in the voice, the appetite, manner of drinking, &c. Do the horse and the Ass, then, come originally from the same stock? are they of the same family, or not? and have they not always been different animals?

Although we cannot demonstrate that the production of a species, by degeneration, is a thing impossible in nature, yet the number of probabilities to the contrary is so great, that even philosophically, we can no longer doubt of it; for if some species have been produced by the degeneration of others, if the species of the Ass comes from the species of the horse, this can only have happened successively; and by degrees there would have been, between the horse and the Ass, a great number of intermediate animals, the first of which would have differed but slightly in its nature from the horse, and the latter would have approached by degrees to that of the Ass; and why do we not see the representatives, the descendants of these intermediate species? why do only the two extremes remain?

The Ass is then an Ass, and not a horse degenerated, the Ass has a naked tail; he is neither a stranger, an intruder, nor a bastard; he has, like all other animals, his family, his species, and his rank; his blood is pure; and although his nobility is less illustrious, yet it is equally good, equally ancient with that of the horse. Why then have we so much contempt for this animal: so good, so patient, so steady, so useful? do men carry their contempt even to animals, those which serve them so well, and at so small an expense? We bestow education on the horse, take care of him, instruct him, and exercise him, whilst the Ass is abandoned to the care of the lowest servant, or the tricks of children; so that, instead of improving, he must loose by his education; and if there were not a fund of good qualities, he would certainly lose them by the manner in which he is treated. He is the may-game of the rustics, who beat him with staffs, overload him, and make him work beyond his strength. We do not consider, that the Ass would be in himself, and with respect to us, the most beautiful, the best formed, and most distinguished of animals, if there were no horse in the world; he is the second, instead of being the first; and it is from that only, that he appears to be of no value: the comparison degrades him; we look at him, and give our opinions not from himself, but comparatively with the horse: we forget that he is an Ass, that he has all the good qualities of his nature, all the gifts attached to his species; and at the same time, we only think of the figure and qualities of the horse, which are wanting in him, and which he ought not to have.

He is naturally as humble, patient, and quiet, as the horse is proud, ardent, and impetuous; he suffers with constancy, and perhaps with courage, chastisement and blows; he is moderate both as to the quantity and quality of his food; he is contented with the hardest and most disagreeable herbs, which the horse, and other animals will leave with disdain; he is very delicate with respect to his water, for he will drink none but the clearest, and from rivulets which he is acquainted with; he drinks as moderately as he eats, and does not put his nose in the water (through fear, as some say, of the shadow of his ears:) as care is not taken to currycomb him, he frequently rolls himself on the grass, thistles, and in the dust; and, without regarding his load, he lays himself down to roll about as often as he can, and by this seems to reproach his master, for the little care he takes of him; for he does not paddle about in the mud and in the water; he even fears to wet his feet, and will turn out of his road to avoid the mud; his legs are also drier and cleaner than the horse;

he is susceptible of education, and some have been seen sufficiently disciplined to be made a show of.

In their earliest youth, they are sprightly, and even handsome; they are light and genteel; but, either from age or bad treatment, they soon lose it, and become slow, indocile, and headstrong. Pliny assures us, that, when they separate the mother from the young one, she will go through fire to recover it. The Ass is also strongly attached to his master, notwithstanding he is usually ill treated; he will smell him afar off, and can distinguish him from all other men;* he also knows the places where he has lived, and the ways which he has frequented: his eyes are good, and his smell acute; his ears are excellent, which has also contributed to his being numbered among timid animals, which it is pretended have all the hearing extremely delicate, and the ears long; when he is overloaded, he shows it by lowering his head and bending down his ears; when he is greatly abused, he opens his mouth, and draws back his lips in a most disagreeable manner, which gives him an air of derision and scorn; if his eyes are covered over, he remains motionless; and when he is laid down on his side and his head is fixed in such a manner that one eye rests on the ground, and that the other is covered with a piece of wood or stick, he will remain in this situation without any motion or endeavour to get up: he walks, trots, and gallops like the horse; but all his motions are smaller, and much slower; notwithstanding he can run with tolerable swiftness, he can gallop but a little way, and only for a small space of time; and whatever pace he uses, if he is hard pressed, he is soon fatigued.

The horse neighs, and the Ass brays, which he does by a long, disagreeable, and discordant cry. The she Ass has the voice clearer and shriller; those that are gelded bray very low; and, though they seem to make the same efforts, and the same motions of the throat, yet their cry cannot be heard far off.

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* A pleasing anecdote illustrative of this is related by Bingley. "An old man, who some years ago sold vegetables in London, used in his employment an Ass to convey his baskets from door to door. Frequently he gave the poor industrious creature a handful of hay, or some pieces of bread, or greens, by way of refreshment and reward. The old man had no need of any goad for the animal, and seldom indeed had he to lift up his hand to drive it on. This kind treatment was one day remarked to him, and he was asked whether his beast was apt to be stubborn. 'Ah, master, (he replied,) it is of no use to be cruel; and as for stubbornness, I cannot complain, for he is ready to do any thing, or to go any where. I bred him myself. He is sometimes skittish and playful, and once ran away from me. You will hardly believe it, but there were more than fifty people after him, attempting in vain to stop him: yet he turned back of himself, and never stopped till he ran his head kindly into my bosom.'"

Of all the animals covered with hair, the Ass is least subject to vermin; he has never any lice, which apparently proceeds from the hardness and dryness of the skin, which is certainly harder than in the greatest part of other quadrupeds; and it is for the same reason that he is much less sensible than the horse to the whip, and the sting of the flies.

At two years and a half old, the first middle incisive teeth fall out, and afterward the other incisive at the side of the first fall also, and are renewed at the same time and in the same order as those of the horse; the age of the Ass is also known by his teeth; the third incisive on each side ascertains it, as in the horse.

The Ass is three or four years in growing, and lives twenty-five or thirty years. They sleep less than the horse, and do not lie down to sleep unless when quite tired.

There are among Asses different races, as among horses; but they are much less known, because they have not been taken the same care of, or followed with the same attention; but we cannot doubt that they came all originally from warm climates. Aristotle assures us, that there were none in his time in Scythia, nor in the other neighbouring countries of Scythia, nor even in Gaul, which, he says, is a cold climate; and he adds, that a cold climate either prevents them from procreating their species, or causes them to degenerate; and that this last circumstance is the reason that they are small and weak in Illyria, Thrace, and Epirus. They appear to have come originally from Arabia, and to have passed from Arabia into Egypt, from Egypt into Greece, from Greece into Italy, from Italy into France, and afterward into Germany, England, and lastly into Sweden, &c.; for they are, in fact, weak and small in proportion to the coldness of the climate. They are said to have been introduced into England subsequently to the reign of Elizabeth. Of all the various breeds of Asses, the Spanish breed is by far the finest. They are often found of the height of fifteen hands, and the value of a hundred guineas.

The Latins, after the Greeks, have called the Wild Ass, Angra; which animal must not be confounded, as some naturalists and many travellers have done, with the zebra; of which we shall give a separate history, because the zebra is of a different species from the Ass. The Angra or Wild Ass, is not striped like the zebra, and is not near so elegant in figure. Wild Asses are found in some of the islands of the Archipelago, and particularly in that of Cerigo; there are also many in the deserts of Libya and Numidia; they are gray, and run so fast that the horses of Barbary only can beat them in hunting. When they see a man, they give a loud cry, turn themselves about, and stop, and do not attempt to fly till they find he comes near them; they are taken in snares made with ropes, and go in troops both to pasturage and to drink; their flesh is also eaten. There were also, in the time of Marmol, Wild Asses in the island of Sardinia, but less than those of Africa, and Pietro della Valle says, he has seen a Wild Ass at Bassora, whose figure differed in no respect from a domestic one; he was only of a lighter colour, and had, from the head to the tail, a stripe of white; he was also much livelier, and lighter in hunting, than Asses usually are.

Neither Asses nor horses were originally found in America, though the climate, and especially of that part called North America, is as good for them as any other: those which the Spaniards have transported from Europe, and which they have left in the West Indies and on the Continent, have greatly multiplied; and in some parts Wild Asses are found in troops, and are taken in snares like wild horses. The Wild Asses of America will not suffer a horse to live among them. Wo to the horse that chances to stray into the pasture where they are feeding in bands. They fall upon him, and bite and kick him, till he ceases to exist.

The Ass with the mare produces large mules, and the horse with the she Ass produces small mules, differing from the first in many respects. We shall finish the natural history of the Ass with that of its properties, and the uses to which the animal may be applied.

As Wild Asses are unknown in these climates, we cannot in reality say whether the flesh is good to eat; but it is certain that the flesh of the domestic Ass is extremely bad, and harder than that of the horse. The milk of the Ass, on the contrary, is an approved and specific remedy for certain complaints, and its use was known from the Greeks to us: that it may be good in its kind, we should choose a young healthy she Ass, full of flesh, which has lately foaled, and which has not since been with the male: care must be taken to feed her well with hay, wheat, and grass, with particular care not to let the milk cool, and not even to expose it to the air, which will spoil it in a little time.

The skin of the Ass is used for different purposes, such as to make drums, shoes, &c., and thick parchment for pocket books, which is slightly varnished over: it is also of Asses' skin that the orientals make the sagri, which we call shagreen. The roughness of the latter, however, is produced by art.

The Ass is, perhaps with respect to himself, the animal which can carry the greatest weight; and as it costs but little to feed him, and he scarcely requires any care, he is of great use in the country, at the mill, &c., he also serves to ride on, as all his paces are gentle, and he stumbles less than the horse: he is frequently put to the plough in countries where the earth is light, and his dung is an excellent manure to enrich hard moist lands.

The Ass, like some other animals, and some birds, possesses in great perfection the power of finding his way home, when lost at a great distance. An instance of this is recorded by Kirby and Spence, in their excellent Introduction to Entomology. In March, 1816, an Ass, the property of Captain Dundas, R. N. then at Malta, was shipped on board the Ister frigate, Captain Forrest, bound from Gibraltar for that island. The vessel having struck on some sands off the Point de Gat, at some distance from the shore, the Ass was thrown overboard, to give it a chance of swimming to land, a poor one, for the sea was running so high, that a boat which left the ship was lost. A few days afterward, however, when the gates of Gibraltar were opened in the morning, the Ass presented himself for admittance, and proceeded to the stable of Mr. Weeks, a merchant, which he had formerly occupied, to the no small surprise of this gentleman, who imagined that, from some accident, the animal had never been shipped on board the Ister. On the return of this vessel to repair, the mystery was explained; and it turned out, that Valiante (as the Ass was called,) had not only swam safely to shore, but, without guide, compass, or travelling map, had found his way from Point de Gat to Gibraltar, a distance of more than two hundred miles, through a mountainous and intricate coun-

he lives; instead of which, the horse, and the grea est part of other animals, in a few years impoverish the best pasture land.

That the Ox is not so proper as the horse, the ass, the camel, &c., for carrying burthens, the form of his back and loins demonstrates; but the thickness of his neck, and the broadness of his shoulders sufficiently indicate that he is proper for drawing, and carrying the yoke; it is also, in this manner that he draws with the most advantage, and it is singular that this custom is not general.

Throughout some of the French provinces they formerly obliged him to draw with his horns, for which the only reason they gave was, that when harness is fixed to his horns, he is managed with more ease: his head is very strong, and he draws very well in this manner, but with much less advantage than when he draws by the shoulders. He seems to be made on purpose for the plough; the size of his body, the slowness of his motions, the shortness of his legs, and even his tranquillity and patience when he labours, seem to concur in rendering him proper for the cultivation of the fields, and more capable than any other of overcoming the constant resistance that the earth opposes to his efforts.

In those species of animals which man has formed into flocks, and where the multiplication is the principal object, the female is more necessary, more useful than the male; the produce of the Cow is a benefit which grows, and which is renewed every instant; the flesh of the calf is healthy and delicate; the milk is the food of children; butter relishes the greatest part of our victuals, and cheese is the common food of the country people; how many poor families are, at this time, reduced to live on their cow! These same men who every day, and from morning to night, groan with anguish, exhausted with continual labour, gain nothing from the earth but black bread, and are obliged to give to others the flour, the substance of their grain; it is through them, and not for them, that the harvests are abundant; these same men who breed and multiply cattle, who take care of and are constantly occupied with them, dare not enjoy the fruits of their labour, the flesh of the beasts they are forbidden to eat, reduced as they are by the necessity of their condition, that is to say, by the brutality of other men, to live like horses, on barley and oats, or on common herbs, and sour milk.

THE COW.

At eighteen months old, the Cow is arrived at puberty, and the Bull when he arrives at two years; but though they can continue their species at this age, it is better to stay till they are three years old before they are suffered to procreate: the strength of these animals is greatest from three years old till nine; after this, neither Cows nor Bulls are fit for any thing but to fatten for the slaughter: as at two years of age they are almost at their full growth, the length of their lives is about fourteen years, and they seldom live longer than fifteen.

In stature the Bull equals the horse, but he is much stronger made in all parts of his body, particularly about the neck and head; his horns are thich and large, and when enraged, he gores and tosses both man and beast. This animal is very short lived for his size and strength, seldom exceeding sixteen years.

The dullest and most idle animals are not those which sleep the soundest, or the longest. The Ox sleeps, but his sleep is short, and not very sound: for he awakes at the least noise: he usually lies on his left side, and that kidney is always larger and fatter than the kidney on the right side.

Oxen, like other domestic animals, differ in colour; but red appears the most common, and the redder they are, the more they are esteemed. It is said, that Oxen of a bay colour last longest; that those of a brown colour are sooner fatigued and shorter lived; that the gray, brindled, and white are not proper for work, and are only fit to be fatted for slaughter; but whatever colour the coat of the Ox is of, it should be shining, thick, and soft to the touch; for if it is rough and uneven, we have reason to think that the animal is not well, or, at least, that he is not of a strong constitution.

The Ox should only be worked from three years old to ten; and it is proper to take him then from the plough, in order to fatten and sell him, as the flesh will be better than if he be kept longer. The age of this animal is known by his teeth and horns. The first front teeth fall out when he is ten months old, and are replaced by others which are larger and not so white: at sixteen months those on each side of the middle teeth drop out, and are replaced by others; and at three years old, all the incisive teeth are renewed: they are then all long, white, and even; and, in proportion as the Ox advances in years, they decay, and become unequal and black. The horns fall off at three years, and these are replaced by other horns, which, like the second teeth, fall off no more; only those of the Ox and the Cow grow larger and longer than those of the Bull; the growth of these second horns is not uniform. The first year, that is to say, the fourth year of the age of the Ox, two little pointed horns sprout, which are even, and terminate at the head by a kind of knob; the following year this knob grows from the head, pushed out by a cylinder of horn, which forms and terminates also by another knob, and so on; for as long as the animal lives, the horns grow: these knobs become annular knots, which are easily to be distinguished in the horns, and by which also the age may be easily known, by reckoning three years for the first knob next the point of the horn, and one year more for each of the intervals between the other knobs.

The breeds of Oxen, especially in England, where muck pains have been taken to improve them, are numerous. One of the largest kinds is the KYLOE OX. It is a Scotch breed of cattle, chiefly of a black colour, with thick hides, much hair, and frequently large and long horns. They fatten well, and frequently attain to a great size. Mr. Culley mentions one which weighed one thousand four hundred and ten pounds and a half. The name of Kyloe is said to be derived from their having crossed the kyles, or ferries, with which the Highlands of Scotland abound.

The horse eats night and day, slowly, but almost continually; the Ox, on the contrary, eats quick, and takes in a short time all the food which he requires after which he ceases eating, and lies down to ruminate. This difference arises from the different conformation of the stomachs of these animals. The Ox, of whose stomachs the two first form but one bag of a vast capacity, can in both of them, without inconvenience, at the same time receive grass, which it afterward ruminates and digests at leisure. The horse, whose stomach is small, and can receive but a small quantity of grass, is filled successively, in proportion as he digests it, and it passes into the intestines, where is performed the principal decomposition of the food.

Chewing the cud is but a vomiting without straining, occasioned by the reaction of the first stomach on the food which it contains. The Ox fills the two first stomachs, the paunch, and the bag, which is but a portion of the paunch, as much as he can. This membrane acts with force on the grass which it contains; it is chewed but a little, and its quantity is greatly increased by fermentation. Were the food liquid, this force of contraction would occasion it to pass by the third stomach, which only communicates with the other by a narrow conveyance, and cannot admit such dry food, or, at least, can only admit the moister parts. The food must, therefore, necessarily pass up again into the œsophagus, the orifice of which is larger than the orifice of the conduit, and the animal again chews and macerates it, and moistens it afresh with his saliva; he reduces it to a paste, liquid enough for it to go into this conduit, which passes into the third stomach, where it is again macerated before it goes into the fourth; and it is in the last stomach that the decomposition of the hay is finished, which is reduced to a perfect mucilage.

What chiefly confirms the truth of this explication is, that as long as the animals suck, and are fed with milk and other liquid aliments, they do not chew the cud; and that they chew the cud much more in winter, when they are fed with dry food, than in summer, when they eat tender grass.

Good milk is neither too thick nor too thin; its consistence should be such, that when we take a drop, it should preserve its roundness without running, and in colour it should be of a beautiful white: that which is inclinable to blue or yellow is not good; its taste should be sweet, without any bitterness or sourness: it is best during the month of May, and during the summer; and milk is never perfectly good but when the cow is of a proper age, and in good health. The milk of young heifers is too thick, that of old cows during the winter is also too thick. The milk of cows which are hot is not good, any more than that of a cow which is near her time, or which has lately calved. In the third and fourth stomach of the calf which sucks, there are clots of curdled milk; these clots of milk dried in the air serve to make rennet, and the longer it is kept the better it is, and it requires but a small quantity to make a large quantity of cheese.

Bulls, cows, and oxen, are very apt to lick themselves, but mostly when they are quiet and at rest; and, as it is thought that it prevents their fattening, it is usual to rub all the parts of their bodies which they can touch with their dung. When this precaution is not taken, they raise up the hair of their coats with their tongues, which are very rough, and they swallow this hair in great quantities. As this substance cannot digest, it remains in the stomach, and forms round smooth balls, which are sometimes of so considerable a size, that they incommode them, and prevent their digestion, by remaining in the stomach. These knobs in time get covered with a brown crust, which is somewhat hard; it is, notwithstanding, only a thick mucilage, which, by rubbing and coaction, becomes hard and shining; it is never found any where but in the paunch, and if any of the hair gets into the other stomachs, it does not remain any more than in the bowels, but seems to pass with the aliment.

Animals which have incisive teeth, such as the horse, and the ass, in both jaws, bite short grass more easily than those which want incisive teeth in the superior jaw; and if the sheep and the goat bite the closest, it is because they are small, and their lips are thin. But the Ox, whose lips are thick, can only bite long grass; and it is for this reason that they do no harm to the pasture on which they live, as they can only bite off the tops of the young grass they do not stir the roots, and for this reason scarcely hurt the growth; instead of which, the sheep and the goat bite so close that they destroy the stalk and spoil the root. Besides the horse chooses the most delicate grass, and leaves the largest to grow, the stalks of which are hard; instead of this, the Ox bites these thick stalks, and by little and little destroys the coarse grass; so that, at the end of some years the field in which the horse has lived becomes a very bad one, whilst that on which the Ox has broused becomes fine pasture.

THE SHEEP.

We can no longer doubt, that animals which are actually domestic, were formerly wild: those whose history has already been given, afford a sufficient proof of it; and there are still wild horses, wild asses, and wild bulls. But man, who has conquered so many millions of individuals, can he boast of having conquered an entire species? As they were all created without his participation, may he not also believe that they all have had orders to grow without his help? If we consider, nevertheless, the weakness and stupidity of the Sheep, and at the same time reflect that this animal, without defence, cannot find safety in flight; that he has for his enemies all devouring animals, which seem to seek him in preference to any other, and to devour him by choice; that formerly this species produced but few: that each individual lived but a short time; we shall be tempted to think that, from the beginning, Sheep were confided to the care of man; that they had occasion for his protection to subsist, and of his care to multiply; since it is a fact, that there are no wild Sheep in the deserts; that in all places where man does not rule, the lion, the tiger, and the wolf reign by force and by cruelty; that these animals of blood and carnage all live long, and multiply much more than Sheep: and in short, that if we were now to abandon the flocks which we have rendered so numerous, they would soon be destroyed before our eyes, and the species would be entirely annihilated by the voraciousness of its numberless enemies.

The Sheep is indeed absolutely without resource and without defence. The Ram has but feeble arms; his courage is nothing but a petulance useless to himself, inconvenient to others, and which is destroyed by castration.* The Wether Sheep are still more timorous than Ewes; it is through fear that they gather so often in troops; the smallest noise, to which they are unaccustomed, is sufficient to make them fly, and get close together. This fear is attended with the greatest stupidity; for they know not how to fly the danger, nor do they even seem to feel the inconvenience of their situation; they continue wherever they are, either in rain or snow; and to oblige them to change their situation, they must have a chief, who is intrusted to walk first, and whom they will follow step by step. This chief will remain with the rest of the flock, without motion, in the same place, if he be not driven from it by the shepherd, or the dog which guards them, who, in fact, watches for their safety, defends, directs, and separates them, assembles them together, and communicates to them motions not their own. Goats, which in many things resemble Sheep, have much more understanding.

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* Buffon does injustice to the Sheep. It is only in his thoroughly domesticated state that the Sheep is cowardly. In mountainous countries, where he ranges over a wide extent, and with little control, he is deficient neither in courage nor intelligence. A Ram or a Wedder will attack, and often defeat, a single dog. He will even engage a bull; and as the bone of his forehead is much harder than that of any other animal, he is generally victorious in this apparently unequal contest. The bull, according to his custom, lowers his head, and is brought to the ground by the stroke of the Ram between his eyes. When individual strength is not sufficient to afford protection, Sheep will combine against dogs and other enemies.—EDITOR.

But this animal, so cowardly in itself, so wanting in sentiment and interior qualities, is to man the most valuable of all animals, and the most useful, both for his present and future support. Of itself it supplies our greatest necessities. It furnishes us both with food and clothing. Without reckoning the particular advantages we have from the milk, the skin, and even the bowels, the bones and the dung of this animal seem to evince that nature has given it nothing but what turns out useful to man.

These animals, whose understanding is so simple, are also of a very weak constitution, for they cannot walk long; travelling weakens and exhausts them; and when they run, they pant and are soon out of breath. The great heat of the sun is as disagreeable to them as too much moisture, cold, or snow. They are subject to many disorders, the greatest part of which are contagious; superabundance of fat sometimes kills them, and always prevents them from having young ones. They suffer a great deal in having young, have frequent abortions, and require more care than any other domestic animal.

At one year old, Sheep lose the two front teeth of the inferior jaw; and almost every one knows that they have no incisive teeth in the superior jaw; at eighteen months old, the two neighbouring teeth of the two first that fell, fall also; and, at three years old, they are all replaced; they are then even, and tolerably white; but, in proportion as the animal becomes older, they become uneven and black. The age of the Ram is also known by his horns, which show themselves in the first year and frequently from the birth; they grow every year a ring, which is a mark round, and continue growing till death. Most commonly, the Sheep have no horns; but they have bony prominences on their heads, in the same part where the horns of the Rams grow; there are, notwithstanding, some Sheep which have two, and even four horns. These Sheep are like the others; their horns are five or six inches long, but less turned than those of the Ram; and when there are four horns, the two exterior ones are shorter than the two others.

Sheep carry their young five months, and drop them at the beginning of the sixth; they usually produce but one

Lamb, and sometimes two; in warm climates they may produce twice a year, but in cold climates they produce but once a year.

The Sheep has great plenty of milk for five or six months. This milk is tolerable food for children, and for poor people in the country; and they make good cheese with it, especially when it is mixed with cow's milk.

In dry soils, and in high grounds, where wild thyme and other odoriferous herbs abound, the flesh of the Sheep is of a much better quality than when it is fed in low plains and humid valleys, unless these plains are sandy and near the sea; because then all the herbs imbibe a saltness, and the flesh of mutton is no where so good as in these salt meadows; the Sheep's milk is also more abundant, and of a better flavour; as nothing is more pleasing to the taste of these animals than salt, so nothing is more salutary for them when it is given to them in moderation; and in some places they put into the sheep-pen a bag of salt, or a salt stone, which they will all lick by turns.

Nothing contributes more to fatten sheep, than to give them water in great quantity; and nothing prevents this advantage so much as the heat of the sun.

We frequently find worms in the livers of animals; and in the Journal des Savans there is a description of worms found in the livers of Sheep and oxen, as also in the German Ephemerides. One would think that these singular worms were only found in the livers of animals which chew the cud; but Mr. Daubenton has found some, which exactly resemble them, in the liver of the ass; and it is probable that they may be found in the livers of other animals. It has also been said, that butterflies have been found in the livers of Sheep.

The operation of sheep shearing is performed once a year. In France it is performed in the month of May, after the Sheep have been well washed, in order to make the wool as clean as possible. In April it would be too cold; and if they were to wait till the months of June and July, there would not be time enough for the wool to grow during the summer, to preserve them from the cold in the winter. The wool of Ewes is usually better, and in greater abundance than that of Wethers; that on the neck, and the top of the back, is the best; that on the thighs, the belly, the tail, the throat, &c., is not so good; and that taken from beasts which are sick or dead is the worst: that which is white is preferable to gray, brown, or black, because in dyeing it will take any colour. For the quality, that which is smooth is better than that which is frizzled; it is also said, that Sheep whose wool is frizzled are not so healthy as others. Another considerable advantage may be made of Sheep, which is, by letting them be on ground we wish to improve. The dung, the urine, and the heat of the bodies of these animals, will in a little time enrich the most exhausted, cold, and infertile ground. A hundred Sheep, in one summer, will enrich eight acres of land for six years.

The ancients have said, that all animals which chew the cud, have suet; but this is only true of the ox, the Sheep, and the goat; and that of the goat is more abundant, whiter, drier, firmer, and of a better quality than any other. Grease differs from suet, by being always soft; instead of which, the fat gets harder as it gets colder; and it is mostly about the loins that this suet is amassed in the greatest quantities, and the left loin has always a larger quantity than the right. Sheep have no other fat about them but suet; and this matter is so predominant in their habit, that all the extremities of the body are edged with it; even the blood contains a considerable quantity.

The wool of Italy, Spain, and England, is finer than the wool in France.

Those animals with large, long tails, which are so common in Africa and Asia, and to which travellers have given the name of Barbary Sheep, appear to be of a different species from our Sheep, as well as the Lamb of America.

THE GOAT.

The species of animals are all separated by such a narrow interval, that there seems between them only the necessary space to draw a line of separation. The ass might almost replace the horse; and if the species of sheep were to fail, that of the Goat might supply the loss. The Goat, like the sheep, furnishes milk, and even in greater abundance; she also has suet in abundance; her hair, though rougher than wool, serves, however, to make very good stuffs; and her skin is worth more than the skin of the sheep. The flesh of the young Goat also nearly resembles that of the lamb. These auxiliary species are wilder and more robust than the principal species. The ass and the Goat do not require so much care as the horse and the sheep; for they every where find food to support them, and brouse equally on plants of all kinds, even coarse herbs. and bushes with thorns on them. They are less affected with the intemperance of the climate; they can do better without the help of man; and the less dependance they have on us, the more they seem to belong to nature.

Although the Goat is a distinct species, and perhaps more distant from that of the sheep than the species of the ass is from that of the horse, yet the Goat will willingly couple with the sheep, as the ass with the mare, and are sometimes prolific; but they have never introduced any intermediate species between the Goat and the sheep. These two species are distinct, remaining constantly separated, and always at the same distance from each other, and have never been changed by this mixture, or produced any new stock, or new breed of intermediate animals; for they have, at most, only produced different individuals, which has no influence on the unity of each primitive species, and which, on the contrary, confirms the reality of their different characteristics.

The Goat has naturally more understanding, and can shift better for herself than the sheep; she comes voluntarily, and is easily familiarized; she is sensible of caresses, and capable of attachment; she is also stronger, lighter, more agile, and less timid than the sheep; she is lively, capricious, and lascivious.

Goats are fond of straying in solitary places, are fond of climbing up steep places, sleeping on the tops of rocks, and on the brink of precipices. They leap with ease and security among the most dreadful precipices; and even when two of them are linked together, they will leap in such perfect concert as to reach in safety the desired spot.

The inconstancy of this animal's nature is shown by the irregularity of her actions; she walks, stops short, runs, jumps, advances, retreats, shows, then hides herself, or flies, and this all from caprice, or without any other determinate cause than her whimsical vivacity: and all the suppleness of the organs, all the nerves of the body, are scarcely sufficient for the petulance and rapidity of these motions, which are all natural to her.

That these animals are naturally fond of mankind, and that in uninhabited places they do not become wild, the following anecdote serves to confirm. In 1698, an English vessel having put into harbour at the island of Bonavista, two negroes presented themselves on board, and offered the English as many Goats as they chose to carry away. On the captain manifesting a degree of surprise at this offer, the negroes observed there were but twelve persons in all the island; that the Goats multiplied so fast, that they became troublesome; and that, far from having any difficulty in taking them, they followed them with a kind of obstinacy, like domestic animals.

Goats go five months with young, and bring forth at the beginning of the sixth month; they suckle the young ones for about a month or five weeks; so that it may be reckoned about six-and-twenty weeks from the time of their coupling till the time that the young Kid begins to eat. The Goat generally produces one Kid, sometimes two, very rarely three, and never more than four; and she brings forth young, from a year or eighteen months, to seven years. The knobs in the horns, and their teeth, ascertain their age. The number of teeth is not always the same in female Goats; but they have usually fewer than the male Goat, which has also the hair rougher, and the beard and the horns longer. These animals, like oxen and sheep, have four stomachs, and chew the cud. This species is more diffused than the sheep; and Goats, like ours, are found in several parts of the world: only in Guinea and other warm countries they are smaller, but in Muscovy and other cold climates they are larger. The Goats of Angora and of Syria have ears hanging down, but are of the same species with ours; they mix and produce together, even in our climate; the males have horns almost as long as the common Goat, but the circumference and directions are very different; they are extended horizontally on each side of the head, and form spirals, somewhat like a worm. The horns of the female are short, and first turn round backward, then bend down, and turn round before, so much, that they end near the eyes; and in some their circumference and direction vary. The male and female Goat of Angora, which I have seen, are such as I have described; and these Goats, like all the animals of Syria, have the hair very long and thick, and so fine that stuffs have been made of it, almost as handsome and glossy as our silks. It is, in fact, what is commonly termed *mohair*.

THE SWINE.

I SHALL treat of the Swine, the Hog of Siam, and the wild Boar, at the same time, because they form all three but one and the same species; one is wild, the other two are domestic.

Aristotle first divided quadrupeds into beasts with the hoof entire, those with cloven feet, and the species which have claws; and he allows that the Hog is of an ambiguous nature; but the only reason he gives is, that in Illyria Swine are found which have hoofs, and in some other parts a species which have claws. This animal is also a kind of exception to the two general rules of nature, viz. that the larger animals are, the fewer young they produce at a birth; and that of all animals, those which have claws are the most prolific. The Hog, though in its make greatly above the middling size, produces more than any such animal, or, indeed, than any other quadruped.

A striking instance of the prolific nature of the Sow is given by the Rev. G. White, in his Natural History of Selborne. "The natural term of a Hog's life (says he) is little known, and the reason is plain—because it is neither profitable nor convenient to keep that turbulent animal to the full extent of its time; however, my neighbour, a man of substance, who had no occasion to study every little advantage to a nicety, kept a half-bred Bantam Sow, who was as thick as she was long, and whose belly swept upon the ground, till she was advanced to her seventeenth year; at which period she showed some tokens of age by the decay of her teeth and the decline of her fertility. For about ten years this prolific mother produced two litters in the year, of about ten at a time, and once above twenty a a litter; but as there were near double the number of Pigs to that of teats, many died. From long experience in the world, this female was grown very sagacious and artful. When she found occasion to converse with a Boar, she used to open all the intervening gates, and march, by her self, up to a distant farm, where one was kept; and, when her purpose was served, would return by the same means At the age of about fifteen, her litters began to be reduced to four or five; and such a litter she exhibited when in her fatting pen. She proved, when fat, good bacon, juicy and tender; the rind, or sward, was remarkably thin. At a moderate computation, she was allowed to have been the fruitful parent of three hundred Pigs; a prodigious instance of fecundity in so large a quadruped."

To the singularities we have already related, we shall add another, which is, that the fat of the Hog is different from that of almost all other quadruped animals, not only in its consistence and quality, but also in its position in the body of the animal. The fat of man, and of animals which have no tallow, such as the dog, the horse, &c. is mixed pretty equally with the flesh; the suet in the ram, the goat, &c. is found only in the extremities of the flesh; but the fat of the Hog is neither mixed with the flesh, nor collected at the extremities of it; it covers it all over, and forms a thick, distinct, and continued bed or layer, between the flesh and the skin. The Hog has this in common with the whale, and other cetaceous animals, the fat of which is only a kind of lard, nearly of the same consistence, but more oily than that of the Hog. This lard in cetaceous animals also forms beneath the skin a bed of many inches in thickness, which envelopes the flesh.

There are only the Hog, and two or three other species of animals, which have defensive or canine teeth very long: they differ from the other teeth, by coming out at the front, and growing during their whole lives. In the elephant and sea cow they are cylindrical, and some feet in length; in the wild Boar and male Hog they are partly bent in form of a circle; and I have seen them from nine to ten inches in length. They are not very deep in the socket, and have also, like those of the elephant, a cavity at the superior extremity; but the elephant and sea cow have only these defensive teeth in the superior jaw, and even want canine teeth in the inferior jaw; instead of which, the male Hog and wild Boar have them in both jaws, and those of the inferior are the most useful to the animal: these are also the most dangerous; for it is with these lower tusks the wild Boar wounds.

Of all quadrupeds, the Hog appears the most rough and unpolished. His voraciousness apparently depends on the continual necessity which he has to fill the vast capaciousness of his stomach. It is the roughness of the hair, the hardness of the skin, and the thickness of the fat, which render these animals so insensible to blows. Mice have been known to lodge in their backs, and eat their fat and their skin, without their seeming sensible of it. Their other senses are good; and the huntsmen know that wild Boars both see, hear, and smell, at a great distance; since, in order to surprise them, they wait in silence during the night, and place themselves under the wind, to prevent the Boars perceiving their smell, of which they are sensible at a great distance, and which always immediately makes them change their road.

This imperfection in the sense of touch is still more augmented by a distemper which is called the measles, and which renders them almost absolutely insensible. This disorder proceeds in general from the coarseness of their food; for the wild Boar, which usually lives on corn, fruits, acorns, and roots, is not subject to this distemper, any more than the young Pig whilst it sucks. This is only to be prevented by keeping the domestic Hog in a clean stable, and giving him plenty of wholesome food: by this means his flesh will become excellent to the taste, and the lard firm and brittle, if, as I have seen practised, he is kept for a fortnight or three weeks before he is killed, in a clean stable, without litter, giving him no other food than dry corn: for this purpose we should choose a Swine of about a year old, full of flesh and fat.

Voracious and uncleanly as he is, the Hog has some good qualities. If one of his own kind utters a cry of distress, every Hog within hearing instantly hurries to his assistance. When teased by a dog, they have been known to hem him round, and kill him. If a male and female are brought up together when young, and the latter loses her companion, she begins immediately to decline, and probably dies of a broken heart.

Nor is the Hog wholly useless while living. In Minorca, he is frequently yoked to the plough in conjunction with an ass, and he performs his task in a workmanlike manner. In some parts of Italy, Swine are used to discover truffles, which grow a few inches under the surface of the soil. A cord is tied round the animal's hind leg, he is conveyed to the field, and wherever he stops to root with his nose, there the truffle is invariably found. A recent French writer on the noble science of gastronomy ludicrously denominates the Hog "the Christopher Columbus of the truffle."

That Hogs are not destitute of sagacity is proved by the long succession of learned Pigs which, for so many years, has been trained to astonish the multitude at fairs, and other places where numbers of persons are congregated. Of their sense and tractability, Bingley, gives a curious instance of another kind. "This," says he, "was afforded by Toomer, the gamekeeper of the late Sir H. P. St. John Mildmay, actually breaking in a New Forest Sow to find game, back and stand, nearly as well as a pointer. This Sow, when very young, took a great partiality to some pointer puppies that Toomer, then under keeper of Broomy Lodge, in the New Forest, was breaking. It played and often came to feed with them. From this circumstance, it occurred to Toomer, to use his own expression, 'that having broken many a dog as obstinate as a Pig, he would try if he could also succeed in breaking a Pig.' The little animal would often go out with the puppies for some distance from home; and Toomer would entice it further by a sort of pudding made of barley meal, which he carried in one of his pockets. The other he filled with stones, which he threw at the Pig whenever she misbehaved, as he was not able to catch and correct her in the same manner as he did his dogs. He informed Sir Henry Mildmay that he found the animal very tractable, and that he soon taught her what he wished by this mode of reward and punishment. Sir Henry Mildmay informed me that he had frequently seen her out with Toomer, when she quartered her ground, stood when she came on game, having an excellent nose, and backed other dogs as well as he ever saw a pointer. When she came on the cold scent of game, she slackened her trot, and gradually dropped her ears and tail till she was certain, and she then fell down on her knees. So staunch was this animal, that she would frequently remain five minutes and upward on her point. As soon as the game rose, she always returned to Toomer, grunting very loudly for her reward of pudding, if it was not immediately given to her. When Toomer died, his widow sent the Pig to Sir Henry Mildmay, who kept it for three years, but never used it, except for the purpose of amusing his friends. In doing this, a fowl was put into a cabbage net, and hidden among the fern in some part of the Park, and the extraordinary animal never failed to point it, in the manner above described. Sir Henry was, at length, obliged to part with this Sow, from a circumstance as singular as the other occurrences of her life. A great number of lambs had been lost, nearly as soon as they were dropped; and a person having been sent to watch the flock, the animal was detected in the very act of devouring a lamb. This carnivorous propensity was ascribed to her having been accustomed to feed with the dogs, and to partake of the flesh on which they were fed. Sir Henry sent her back to Mrs. Toomer, who sold her to Mr. Sykes, of Brookwood, in the New Forest, where she died the usual death of a Pig, and was converted into bacon."

The **Wild Boar** is hunted by dogs, or else taken by surprise in the night by the light of the moon. As he runs but slowly, leaves a strong odour behind him, defends himself against the dogs, and wounds them dangerously, so he should not be hunted by dogs designed for the stag and the goat; for this hunting spoils their scent, and teaches them to go slowly. The oldest only should be attacked, and these are easily known by their traces; a young wild Boar, of three years old, is difficult to take, because he runs a great way without stopping; instead of which, a wild Boar that is older does not run far, suffers himself to be closely hunted, and has no great fear of the dogs. In the day, he usually hides himself in the thickest and most unfrequented part of the wood; and in the evening, and at night, he goes out to seek for food. In summer, when the corn is ripe, it is easy to surprise him; but mostly so among oats, where he frequents every night. As soon as he is killed, the hunters immediately cut out the testes, the smell of which is so strong, that if five or six hours were to elapse without cutting them out, all the flesh would be infected; and in an old wild Boar the head only is good to eat; instead of which, the flesh of the young wild Boar is extremely delicate.

No person that has lived in the country ever so little, is ignorant of the profits arising from the Hog: his flesh sells for more than that of the ox; the lard is valuable; the blood, the bowels, the viscera, the feet and the tongue, when properly prepared, are all fit to eat. The dung of the Hog is much colder than that of other animals, and should not be used for any but hot and dry lands. The skin has its use, for saddles are made of it; and brooms, brushes, and pencil brushes are made of the hair. The flesh of this animal takes salt and saltpetre better than any other, and will keep longer salted.

This species, though abundant, and greatly spread in

Europe, in Africa, and in Asia, was not, however, found on the continent of the New World. They were transported by the Spaniards, who have carried black Hogs to the continent, and to almost all the large islands of America; they are multiplied, and become wild in many places; and resemble our wild Boars, with this difference, that the body is shorter, the head larger, and the skin thicker; and domestic Hogs, in warm climates, are all black like wild Boars.

The **Hog of Siam** resembles the wild Boar more than the common Hog. One of the most evident signs of degeneration is the ears, which become much more supple when the animal changes into the domestic state: in short, those of the domestic Hog are not near so stiff, are much longer, and more pendent than those of the wild Boar, which should be looked on as the model of the species.

CHAPTER VIII.

On another Class of Domestic Animals—The Dog—Its Varieties—Of the Cat, &c.

THE DOG.

The largeness of the make, the elegance of the form, the strength of the body, the freedom of the motions, and all the exterior qualities, are not the noblest properties in an animated being; and, as in mankind, understanding is preferred to figure, courage to strength, and sentiment to beauty; so the interior qualities are those which we esteem most in animals; for it is in these that they differ from the automaton, it is by these they are raised above the vegetable, and made to approach nearer to ourselves; it is their sense which ennobles their being, which regulates, which enlivens it, which commands the organs, makes the members active, gives birth to desire, and gives to matter progressive motion, will, and life.

The Dog, independently of his beauty, vivacity, strength, and swiftness, has all the interior qualities which can attract the regard of man. The tame Dog comes to lay at his master's feet his courage, strength, and talents, and waits his orders to use them; he consults, interrogates, and beseeches; the glance of his eye is sufficient; he understands the signs of his will. Without the vices of man, he has all the ardour of sentiment; and what is more, he has fidelity and constancy in his affections; no ambition, no interest, no desire of revenge, no fear but that of displeasing him; he is all zeal, all warmth, and all obedience; more sensible to the remembrance of benefits than of wrongs, he soon forgets, or only remembers them to make his attachment the stronger; far from irritating, or running away, he even exposes himself to new proofs; he licks the hand which is the cause of his pain, he only opposes it by his cries, and at length entirely disarms it by his patience and submission.

More docile and flexible than any other animal, the Dog is not only instructed in a short time, but he even conforms himself to the motions, manners, and habits of those who command him; he has all the manners of the house where he inhabits; like the other domestics, he is disdainful with the great, and rustic in the country, always attentive to his master; and striving to anticipate the wants of his friends he gives no attention to indifferent persons, and declares war against those whose station makes them importunate; he knows them by their dress, their voice, their gestures, and prevents their approach. When the care of the house is entrusted to him during the night, he becomes more fiery and sometimes ferocious; he watches, he walks his rounds, he scents strangers afar off; and, if they happen to stop, or attempt to break in, he flies to oppose them, and, by reiterated barkings, efforts, and cries of passion, he gives the alarm. As furious against men of prey as against devouring animals, he flies upon, wounds, and tears them, and takes from them what they were endeavouring to steal; but, content with having conquered, he rests himself on the spoils, will not touch it even to satisfy his appetite, and at once gives an example of courage, temperance, and fidelity.

Thus we may see of what importance this species is in the order of nature. By supposing for a moment that they had never existed; without the assistance of the Dog, how could man have been able to tame, and reduce into slavery, other animals? How could he have discovered, hunted, and destroyed wild and obnoxious animals? To keep himself in safety, and to render himself master of the living universe, it was necessary to begin by making himself friends among animals, in order to oppose them to others. The first art then, of mankind, was the education of Dogs, and the fruit of this art was the conquest and peaceable possession of the earth.

The Dog, faithful to man, will always preserve a portion of empire, and a degree of superiority over other animals; he commands them, and reigns himself at the head of a flock, where he makes himself better understood than the voice of the shepherd; safety, order, and discipline are the fruits of his vigilance and activity; they are a people who are submissive to him, whom he conducts and protects, and against whom he never employs force, unless it be to maintain peace. But it is above all in war, against those animals which are his enemies, or which are independent, that his courage shines forth, that his understanding is displayed, and that his natural and acquired talents are united. As soon as the sound of the horn, or the voice of the huntsman, has given the signal of an approaching war, filled with a new ardour, the Dog expresses his joy by the most lively transports, and shows by his motions and cries of impatience, his desire to combat and to conquer; then, walking in silence, he searches to know the place where his enemy is, to discover and surprise him; he seeks out his traces, he follows them step by step, and, by different cries, indicates the time, the distance, the species, and even the age of what he is in pursuit of.

In deserts, and depopulated countries, there are wild Dogs, which in their manners differ only from wolves, by the facility with which they are tamed; they unite also in large troops, to hunt and attack by force wild boars and bulls, and even lions and tigers. In America, the wild Dogs spring from a breed anciently domestic, having been transported from Europe; and having been either forgotten or abandoned in these deserts, they are multiplied to such a degree, that they go in troops to inhabited places, where they attack the cattle, and will sometimes even insult the inhabitants. They are then obliged to drive them away by force, and to kill them like other ferocious animals; and, in fact, Dogs are such, till they become acquainted with man: but when we approach them with gentleness, they grow tame, soon become familiar, and remain faithfully attached to their masters; instead of which, the wolf, although taken young, and brought up in the house, is only gentle in his youth, never loses his desire for prey, and, sooner or later, gives himself up to his fondness for rapine and destruction.

The Dog may be said to be the only animal whose fidelity may be put to the proof; the only one which always knows his master and his friends; the only one which, as soon as an unknown person arrives, perceives it; the only one which understands his own name, and which knows the domestic call; the only one which has not confidence in himself alone; the only one which, when he has lost his master, and cannot find him, calls him by his lamentations; the only one which in a long journey, a journey that, perhaps, he has been but once, will remember the way, and find the road; the only one, in fine, whose talents are evident, and whose education is always good.

Of all animals, moreover, the Dog is most susceptible of impressions, and most easily taught by moral causes; he is also, above all other creatures, most subject to the variety and other alterations caused by physical influence. The temperament, the faculties, and habits of the body vary prodigiously, and the shape is not uniform: in the same country, one Dog is very different from another Dog, and the species is quite different in itself in different climates.

But what is most difficult to ascertain in the numerous variety of different races, is the character of the primitive and original breed. How are we to know the effects produced by the influence of the climate, food, &c.?

As amongst domestic animals, the Dog is, above all others, that which is most attached to man; that which, living like man, lives also the most irregularly; that in which sentiment predominates enough to render him docile, obedient, and susceptible of all impressions, and even of all constraint; it is not astonishing, that of all animals this should also be that in which we find the greatest variety, not only in figure, in height, and in colour, but in every other quality.

There are also some circumstances, which still concur to this change: the Dog in general lives but a short time: he produces frequently, and in pretty large numbers; and as he is perpetually beneath the eyes of man, as soon as by a chance usual to nature, there may have been found among some individuals, singularities, or apparent varieties, endeavours may have been used in order to perpetuate them, by uniting together these singular individuals, as we do at present, when we want to procure new breeds of Dogs, and other animals.

Dogs which have been abandoned in the deserts of America, and have lived wild for a hundred and fifty, or two hundred years, though changed from their original breed, since they are sprung from domestic Dogs, have, notwithstanding this long space of time, retained, at least, in part, their primitive form, and travellers report that they resemble our greyhound. These wild Dogs, however, are extremely thin and light; and as the greyhound does not differ much from the cur, or from the Dog which we will call the shepherd's Dog, it is natural to think, that these wild Dogs are rather of this species, than real greyhounds; since on the other side, ancient travellers have said, that the Dogs of Canada had the ears straight like foxes, and resembled the middle sized mastiff, that is, our shepherd's Dog, and that those of the deserts of the Antilles isles had also the head and ears very long, and in appearance very much resemble foxes.

Besides this, in searching with a view to find what travellers have said of the forms of Dogs of different countries, we find, that Dogs of cold climates have all long snouts and straight ears; that those of Lapland are small, that their ears are straight, and their snouts pointed; that those of Siberia, known by the name of wolf-dogs, are larger than those of Lapland; but that they have also the ears straight, the hair rough, and the snout pointed; that those of Iceland have also some resemblance to those of Siberia; and that, even in warm climates, such as the Cape of Good Hope, the Dogs natural to the countries, have sharp snouts, straight ears, the tail dragging on the ground, and the hair shining, but long and frizzled.

We may presume, then, with some appearance of truth, that the shepherd's Dog is, of all Dogs, that which approaches nearest to the primitive races of this species; since, in all countries inhabited by savages, or, at least, by men half civilized, the Dogs resemble this breed more than any other; since, on the whole continent of the new world, they had no other; since they are to be found only in the north and south of our continent, and since, in France and England, where this species is usually called the shepherd's Dog, and in other temperate climates, it is still more numerous; though we are much more occupied in giving birth to, or in multiplying, the breeds which are more pleasing, than preserving those which are more useful, and which we have disdained and abandoned to the peasants who have the care of our flocks.

The Dog, when he is born, is not entirely finished. In this species, as in those of all animals which produce in great numbers, the young ones, at the time of their birth, are not so perfect as those of animals which only produce one or two. Dogs are commonly born with their eyes shut: the two eyelids are not only closed, but adhere by a membrane, which breaks away as soon as the muscle of the superior eyelid is become strong enough to raise itself, and to overcome this obstacle; and the greater number of Dogs have not their eyes open till the tenth or twelfth day. At this time, the bones of the skull are not finished, the body is puffed out, the snout is swelled, and they have not their proper form; but in less than a month they learn to make use of all their senses, and begin to have strength and a swift growth. In the fourth month, they lose some of their teeth; and these, as in other animals, are soon replaced by others, which do not fall out again: they have in all forty-two teeth.

Bitches go with young nine weeks, that is, sixty-three days, but never less than sixty. Length of life in dogs is like that of other animals, proportioned to the time required for their growth; for if they are about two years in growing, so they live also twice seven years.

In the Memoirs of the Academy of Sciences, we find the history of a Bitch, which having been accidentally left behind in a country-house, subsisted forty days without any other food than the stuff or the wool of a mattrass that she had torn. Water seems to be still more necessary for dogs than food; they drink frequently and abundantly; and it is even a vulgar opinion, that if they want water for any length of time, they become mad.

To give a clearer idea of the order of Dogs, of their generation in different climates, and of the mixture of their breeds, I here join a table, or rather a kind of genealogical tree, in which, with a glance of the eye, all the different varieties of the species may be seen.

The *Shepherd's Dog* is the stock or body of the tree. This Dog, transported into the rigorous climate of the North, as into Lapland, for example, has become ugly and small; he seems, however, to have been kept up, and even brought to perfection. in Iceland, Russia, and Siberia, where the climate is rather less rigorous, and where the people are more civilized. These changes have been occasioned by the influence of climate alone, which has produced no great alteration in their form; for all these Dogs have straight ears, long and thick hair, and a wild look.

The same shepherd's Dogs, transported into temperate climates, and among people who are quite civilized, such as those of England, France, or Germany, lose their savage air, their straight ears, their long, thick, and rough hair, and become *mastiff*, *hound*, or *bulldog*, by the influence of climate merely. Of the mastiff, and the bulldog, the ears are still partly straight, or only half pendent; and in their manners and sanguinary disposition they resemble the Dog from which they drew their origin. The hound is the most distant of the three: the long pendent ears, the docility, gentleness, and, we may say, timidity of this Dog, are so many proofs of the great degeneration, or, better, perhaps, to express it, the great perfection, which a long state of subjection has produced, joined to a careful and well followed education.

The *hound*, the *setting-dog*, and the *terrier*, are only one and the same race of Dogs; for it has been remarked, that the same birth has produced setting-dogs, terriers, and hounds, though the hound bitch has only been covered by one of the three Dogs.

The *beagle*, and almost all sorts of Dogs transported into Spain and Barbary, have the hair fine, long, and thick, and become *spaniels* and *barbets*. The great and little spaniel, which differ only in size, when transported into England, change their colour from black to white, and, by the influence of the climate, are become large, small, and shaggy: to these we may also join the terrier, which is but a black beagle, like the others, but with liver-coloured marks on the fore feet, the eye, and the snout.

The shepherd's Dog, transported to the north, is become a *large Dane*, and into the south, is become a *greyhound*. The large greyhounds come from the Levant; those of a middling size from Italy: and greyhounds from the latter of these places, when transported into England, become smaller greyhounds.

The large Danes, transported into Ireland, the Ukraine, Tartary, Epirus, and Albania, are become large *Irish Dogs*, and in size surpass all the rest of the species.

The bulldog transported from England into Denmark, is become a *small Dane;* and this small Dane, when transported into warm climates, loses its hair entirely, and becomes the naked *Turk Dog*. All these races, with their varieties, have been produced solely by the influence of climate, joined to the effect of their food, and of a careful education; the other Dogs are not of a pure race, and come from a mixture of these first races.

The greyhound, and the shepherd's dog have produced the *mongrel greyhound*, which is called the greyhound with wolf's clothing. Of this mongrel the snout is not so slender as that of the Turkish greyhound, which is very rare in France.

The large Dane, and the large spaniel, have produced together the *Dog of Calabria*, which is a handsome Dog with long, thick hair, and which is taller than the larger mastiff.

The spaniel and the terrier produce another kind of Dog, which is called the *Burgundy spaniel*. The spaniel and the little Dane produce the *lion dog*, which is very scarce.

The Dogs with long, fine, and curled hair which are called *Dogs of Burgos*, and which are of the size of the largest barbets, come from the large spaniel and the barbet.

The *little barbet* comes from the small spaniel and the barbet.

The bulldog produces, with the mastiff, a mongrel, which is called the *strong bulldog*, and is much larger than the real bulldog, and approaches the bulldog more than the mastiff.

The *pug* comes from the English bulldog, and the little Dane.

All these races are simple mongrels, and come from the mixture of two pure races; but there are also other Dogs which may be called double mongrels, because they come from the mixture of a pure race, and of one already mixed.

The *shockdog* is a double mongrel, which comes from the pug and the small Dane.

The *Dog of Alicant* is also a double mongrel, which comes from the pug and the little spaniel.

The *Maltese*, or lapdog, is a double mongrel, and comes from the small spaniel and the barbet.*

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* The theory of Buffon respecting the original stock whence all the varieties of dogs are derived, is now generally abandoned as untenable. A re-

In addition to what Buffon has said with respect to Dogs in general, it will be proper to lay before the reader a brief account of some of the numerous species of these useful and affectionate animals. The first which we shall introduce to notice has few claims to our kindness. Unlike his congeners, he has no love for man, and seems to possess no attractive qualities.

THE HYÆNA DOG.

THIS Dog is a native of Southern Africa, and is a serious nuisance to the frontier settlements at the Cape. It hunts in packs, generally at night, and is exceedingly fierce, swift and active. Sheep it unhesitatingly attacks, but it is less daring with respect to the horse and the ox, and, accordingly, it waits till the animal is asleep. The injuries which it inflicts are usually mortal. To bite off the tail of the ox seems to be its delight. The Hyæna Dog is smaller and slenderer than the hyæna or the wolf. In colour it is of a reddish or yellowish brown, variously mottled, along the sides of the body, and on the legs; in large patches of intermingled black and white. From its completely black nose and muzzle, a strong black line passes up the centre of the forehead to between the ears, which are very large, black on both surfaces, and furnished with a broad and expanded tuft of long whitish hairs, filling a considerable part of their concavity. Its tail, of moderate length, is covered with long bushy hair, divided in the middle by a ring of black. Its ferocity seems to be untameable. Mr. Burchell, who first brought it to England, kept one for twelve months, at the end of which period even its feeder did not dare to lay his hand upon it.

THE ESQUIMAUX DOG.

THIS animal is one of those varieties of the Dog from which man receives obedience and affection. To the Esquimaux Indians his services are invaluable. He assists them to hunt the bear, the rein-deer, and the seal; in summer, while attending his master in the chase, he carries a weight of thirty pounds; in winter he is yoked to a sledge, and conveys his master over the trackless snows. Several

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cent writer (Mr. Wilson) endeavours to trace to the wolf and jackal the origin of all our domestic breeds of dogs. ED.

of them drawing together will convey five or six persons, at the rate of seven or eight miles an hour, and will travel sixty miles in a day. In winter he is scantily fed, and roughly treated, yet his fidelity remains unshaken. The Esquimaux Dog does not bark. In appearance he comes nearest to the shepherd's Dog and the wolf Dog. His ears are short and erect, and his bushy tail curves elegantly over his back. His average stature is one foot ten inches, and the length of his body, from the back of the head to the commencement of the tail, is two feet three inches. Their coat is long and furry, and is sometimes brindled, sometimes of a dingy red, sometimes black and white, and sometimes almost wholly black.

The manner in which the sledge is drawn by these animals is described with much accuracy and spirit by Captain Parry, in the Journal of his Second Voyage. "When drawing a sledge (says he,) the Dogs have a simple harness (annoo) of deer or seal skin, going round the neck by one bight, and another for each of the fore legs, with a single thong leading over the back, and attached to the sledge as a trace. Though they appear at first sight to be huddled together without regard to regularity, there is, in fact, considerable attention paid to their arrangement, particularly in the selection of a Dog of peculiar spirit and sagacity, who is allowed, by a longer trace, to precede the rest as leader, and to whom, in turning to the right or left, the driver usually addresses himself. This choice is made without regard to age or sex, and the rest of the Dogs take precedency according to their training or sagacity, the least effective being put nearest the sledge. The leader is usually from eighteen to twenty feet from the fore part of the sledge, and the hindmost Dog about half that distance; so that when ten or twelve are running together, several are nearly abreast of each other. The driver sits quite low, on the fore part of the sledge, with his feet overhanging the snow on one side, and having in his hand a whip, of which the handle is plated a little way down to stiffen it, and give it a spring, on which much of its use depends; and that which composes the lash is chewed by the women, to make it flexible in frosty weather. The men acquire from their youth considerable expertness in the use of this whip, the lash of which is left to trail along the ground by the side of the sledge, and with which they can inflict a very severe blow on any Dog at pleasure. Though the

Dogs are kept in training entirely by fear of the whip, and, indeed, without it, would soon have their own way, its immediate effect is always detrimental to the draught of the sledge, for not only does the individual that is struck draw back and slacken his trace, but generally turns upon his next neighbour, and this passing on to the next, occasions a general divergency, accompanied by the usual yelping and showing of the teeth. The Dogs then come together again by degrees, and the draught of the sledge is accelerated; but even at the best of times, by this rude mode of draught, the traces of one third of the Dogs form an angle of thirty or forty degrees on each side of the direction in which the sledge is advancing. Another great inconvenience attending the Esquimaux method of putting the Dogs to, besides that of not employing their strength to the best advantage, is the constant entanglement of the traces, by the Dogs repeatedly doubling under from side to side to avoid the whip; so that, after running a few miles, the traces always require to be taken off and cleaned.

"In directing the sledge, the whip acts no very essential part, the driver for this purpose using certain words, as the carters do with us, to make the Dogs turn more to the right or left. To these a good leader attends with admirable precision, especially if his own name be repeated at the same time, looking behind over his shoulder with great earnestness, as if listening to the directions of the driver. On a beaten track, or even where a single foot or sledge mark is occasionally discernible, there is not the slightest trouble in guiding the Dogs: for even in the darkest night, and in the heaviest snow-drift, there is little or no danger of their losing the road, the leader keeping his nose near the ground, and directing the rest with wonderful sagacity. Where, however, there is no beaten track, the best driver among them makes a terrible circuitous course; as all the Esquimaux roads plainly show; these generally occupying an extent of six miles, when with a horse and sledge, the journey would scarcely amounted to five. On rough ground, as among hummocks of ice, the sledge would be frequently overturned, or altogether stopped, if the driver did not repeatedly get off, and by lifting or drawing it on one side, steer clear of those accidents. At all times, indeed, except on a smooth and well made road, he is pretty constantly employed thus with his feet, which, together with his never ceasing vociferations, and frequent use of the whip, renders the driving of one of these vehicles by no means a pleasant or easy task. When the driver wishes to stop the sledge, he call out ‘ Wo, woa,’ exactly as our carters do, but the attention paid to this command depends altogether on his ability to enforce it. If the weight is small and the journey homeward, the Dogs are not to be thus delayed; the driver is therefore obliged to dig his heels into the snow to obstruct their progress, and having thus succeeded in stopping them, he stands up with one leg before the foremost cross piece of the sledge, till, by means of laying the whip gently over each Dog’s head, he has made them all lie down. He then takes care not to quit his position, so that should the Dogs set off, he is thrown upon the sledge instead of being left behind by them.

“ With heavy loads, the Dogs draw best with one of their own people, especially a woman, walking a little way ahead; and in this case they are sometimes enticed to mend their pace by holding a mitten to the mouth, and then making the motion of cutting it with a knife and throwing it on the snow, when the dogs mistaking it for meat, hasten forward to pick it up. The women also entice them from the huts in a similar manner. The rate at which they travel depends, of course, on the weight they have to draw, and the road on which their journey is performed. When the latter is level, and very hard and smooth, constituting what, in other parts of North America, is called “ good sleighing,” six or seven Dogs will draw from eight to ten hundred weight, at the rate of seven or eight miles an hour, for several hours together; and will easily, under these circumstances, perform a journey of fifty or sixty miles a day. On untrodden snow, five-and-twenty or thirty miles would be a good day’s journey. The same number of well fed Dogs, with a weight of five or six hundred (that of the sledge included,) are almost unmanageable, and will, on a smooth road, run any way they please, at the rate of ten miles an hour. The work performed by a greater number of Dogs is, however, by no means in a proportion to this, owing to the imperfect mode already described of employing the strength of these sturdy creatures, and to the more frequent snarling and fighting occasioned by an increase of numbers.”

THE HARE INDIAN DOG.

This Dog, which also bears the name of the **Mackenzie** River Dog, appears to be peculiar to the Hare Indians and the other tribes which frequent the banks of the Great Bear Lake and the Mackenzie River. The Indians among whom they are bred derive their subsistence almost wholly from the chase, and this species of Dog materially aids them in the pursuit of the game, as its broad feet and light make, enable it to run over the snow without sinking, however slight may be the crust ,which is on the snow. The animal is an exceedingly graceful and good tempered creature, of small size, slenderly made, with long and delicate legs, and a thick bushy tail slightly curved upward. It has a narrow, elongated, pointed muzzle, covered with white and very short hair; erect ears, broad at the base, and pointed at the tip; and long straight hair on the body, the ground colour of which is white, marked with large irregular patches of grayish black, intermingled with various shades of brown.

THE AFRICAN BLOODHOUND.

There are now in the Tower of London, two males and a female of this species—a species which is remarkable for its elegance and its sagacity. They were brought from Africa, by Major Denham. While he was in that country he frequently employed them in hunting the gazelle; in performing which they displayed infinite skill. After a lapse of an hour and a half or even two hours, they would follow the scent; and they would often quit the line of it, to cut off a double, or, in other words, to shorten the distance, and would recover it with the greatest ease. This Dog is used in Africa to track a flying foe to his retreat. Captivity has rendered the female surly, and has deprived the whole of them of the desire to perpetuate their race.

THE BLOODHOUND

Is a tall, beautifully formed animal, usually of a reddish or brown colour, which was in high esteem among our ancestors. His employ was to recover any game that had escaped wounded from the hunter, or had been stolen out of the forest; but he was still more serviceable in hu thieves and robbers by their footsteps. For the latter pose they are now almost disused in this country; they are still sometimes employed in the royal forest track deer stealers, and on such occasions they displa extraordinary sagacity and acuteness of scent. In Spanish West India islands, however, they are con used in the pursuit of criminals, and are accompan officers called chasseurs.

THE AUSTRALIAN DOG.

This Dog, which is also called the Australian and New Holland Dog, and by the natives the Dingo, is about equal in size, and similar in its proportions, to the common House Dog, or Lurcher. It is two feet five inches in length, muscular legged, agile, and courageous, with a bushy tail, and long straight hair, of a deep fawn colour on the upper parts, and almost white on the under surface. He is exceedingly voracious and fierce. One of them has been known to leap on the back of an ass, which was not saved from it without considerable difficulty.

THE MASTIFF.

This species of Dog is peculiar to our own country. It is nearly of the size of a Newfoundland Dog, strong and active, possessing great sagacity, and is commonly employed as a watch Dog. The Mastiff is said seldom to use violence against intruders, unless resisted, and even then he will sometimes only throw down the person, and hold him for hours, without doing him further injury, till he is relieved. He has a large head, with short pendent ears, and thick lips, hanging on each side. In the reign of James I. a contest was exhibited between three Mastiffs and a lion, in which the king of beasts was compelled to seek for safety in flight.

THE BULLDOG.

Though much less in size than the mastiff, the Bulldog is nearly equal to him in strength, and superior to him in fierceness. Those of the brindled kind are accounted the best. No natural antipathy can exceed that of this animal against the bull. Without barking, he will naturally fly at and seize the fiercest bull; running directly at his head, and sometimes catching hold of his nose, he will pin the bull to the ground; nor can he, without great difficulty, be made to quit his hold. Such is his rage, that at a bull fight in the north of England, a brute in the shape of a man wagered, that he would successively cut off the feet of his Dog, and that the animal should return to the attack after each amputation. The horrible experiment was tried, and the wager was won. Two of these Dogs, let loose, at once, are a match for a bull, three for a bear, and four for a lion.

THE TERRIER

Is a small thickset hound, of which there are two varieties, the one with short legs, long back, and commonly of a black or yellowish colour, mingled with white; the other more sprightly in appearance, with a shorter body, and the colour reddish brown or black. It has a most acute sense of smelling, and an inveterate enmity to all kinds of vermin. Nor is it excelled by any Dog in the quality of courage. It will encounter even the badger with the utmost bravery, though it often receives severe wounds in the contest, which, however, it bears with unshrinking fortitude. As it is very expert in forcing foxes and other game out of their coverts, and is particularly hostile to the fox, it is generally an attendant on every pack of hounds; in which case the choice of the huntsman is not directed by the size of the animal, but by its strength and power of endurance.

THE HARRIER

Is closely allied to the beagle, though larger, more swift, and vigorous. It is ardent in the chase, and frequently outstrips the fleetest sportsman. A mixed breed, between this and the large terrier, forms a strong, active, and hardy hound, which is used in hunting the otter. It is rough, wire-haired, thick-quartered, long-eared, and thin-shouldered.

THE COACH DOG.

This animal is one of great beauty, its colour being white, elegantly and profusely marked with round black spots. It has been called, but erroneously, the Danish Dog, and Buffon makes it of Bengalian origin, but Pennant declares that it is derived from Dalmatia, in European Turkey. It is, indeed, often denominated the Dalmatian Dog. By some it is said to be the common harrier of Italy, and to have been known and domesticated in that country for two centuries. Its power of smelling is but indifferent, and it is generally kept in genteel houses as a handsome attendant on a carriage.

THE SPANISH POINTER

Is derived, as its name implies, from Spain, but has long been naturalized in this country, where great attention has been paid to preserve the breed in all its purity. It is remarkable for the aptness and facility with which it receives instruction, and may be said to be almost self-taught; whilst the English Pointer requires the greatest care and attention in breaking and training for the sport. But on the other hand, it is less capable than the English Pointer of enduring fatigue. It is chiefly employed in finding partridges, pheasants, &c.

THE SPANIEL.

THIS beautiful animal is of Spanish extraction, whence it derives its name, and the silky softness of its coat. It is elegant in form, with long pendant ears, and hair gracefully curled or waved. Its scent is keen, and it possesses in the fullest perfection the good qualities of sagacity, docility, and attachment. So strong is the latter, that instances have been known in which the animal has died of grief for the loss of its master Dash, a Spaniel belonging to the gamekeeper of the Rev. Mr. Corsellis, would not quit his master's bed after his death; being taken away, he perpetually returned to the room, and daily visited the grave; and, in spite of all the kindness that was shown to him, he died at the end of fourteen days. The Land Spaniel may be taught a variety of tricks, such as fetching, carrying, and diving. He is employed in setting for partridges, quails, &c. and his steadiness and patience, in the performance of this task, are worthy of admiration. There is another variety of this kind called the SLATER used in hawking, to spring the game; but it is much inferior in speed and perseverance to the former.

THE WATER SPANIEL.

Of all the Dog kind, this animal seems to be the most docile, and the most attached to man. Many other species are impatient of correction; but the Water Spaniel, though fierce to strangers, bears blows and ill usage from his master, with undiminished affection. This creature is well calculated for hunting of otters, ducks, &c. Watching the stroke of the piece, and perceiving the game that is shot, he instantly swims after it, and brings it to his master. He will fetch and carry at command, and will dive to the bottom of deep water in search of a piece of money, which he will bring out, and deposit at the feet of the person by whom he was sent. Cowper has recorded, in a pleasing poem, an instance of sagacity and of a desire to gratify a master, which was displayed by his Spaniel Beau. As he was walking by the Ouse, he was desirous to obtain one of the waterlilies, which grew in the river, but was unable to reach it. Beau seemed disposed to assist him, but the poet called him off, and pursued his ramble. On his return, however, Beau rushed into the stream, cropped a lily, and laid it at his master's feet.

THE ENGLISH SETTER

Is considered as one of the most valuable of our hunting Dogs; it being hardy, nimble, and handsome, and possessed of exquisite scent and sagacity. His manner of seeking game is at once correctly and poetically described in the following lines by Somervile:

> "When autumn smiles, all-beauteous in decay,
> And paints each chequered grove with various hues,
> My SETTER ranges in the new-shorn fields:
> His nose in air erect; from ridge to ridge
> Panting he bounds, his quarter'd ground divides
> In equal intervals, nor careless leaves
> One inch untried: at length the tainted gales
> His nostrils wide inhale: quick joy elates
> His beating heart, which, awed by discipline
> Severe, he dares not own, but cautious creeps
> Low cowering, step by step, at last attains
> His proper distance: there he stops at once,
> And points with his instructive nose upon
> The trembling prey."

THE BEAGLE.

This is the smallest kind of Dog that is used in the chase, and is chiefly employed in hare hunting. It is remarkable for the musical melody of its tone, and the keenness of its scent. Of this Dog there are two varieties, the Rough Beagle and the Smooth Beagle.

THE SPRINGER

Is a lively and pleasant species of Dog; very expert in raising woodcocks and snipes from their haunts in woods and marshes, through which it ranges with an untirable perseverance. Buffon gives the name of Pyrame to a variety of this Dog, which is distinguished by a patch of red on the legs, and another over each eye.

Of the same kind is that elegant little Dog, which, in this country, is well known under the appellation of King Charles's Dog; as having been the favourite companion of that monarch, who scarcely ever walked out without being attended by several of them. It has a small rounded head, with a short snout, the tail is curved back, the hair is curled, the ears are long, and the feet are webbed.

The Large Water Dog is of an analogous breed, but is less handsome. It has curly hair, which bears a great resemblance to wool, and it swims excellently, in consequence of the webs between the toes being much larger than those of most other Dogs. It is often kept on board of ships, for the purpose of recovering articles which chance to fall into the water.

THE GREYHOUND.

This elegantly formed animal was once held in such estimation that it was the peculiar companion of a gentleman; who was anciently known by his horse, his hawk, and his Greyhound. In such repute was it, that Canute enacted a law that it should not even be kept by any one who was under the rank of a gentleman. It has a long body, a neat and elongated head, full eye, long mouth, sharp and very white teeth, little ears, with thin gristles in them, a straight neck, and full breast; his fore and hind legs are long and straight; his ribs round, strong, and full of sinews, and taper about the belly. It is the swiftest of the Dog kind, and easily trained for the chase when twelve months old. It courses by sight and not by scent, as other hounds do; and is supposed to outlive all the Dog tribe. Buffon imagines it to be descended from the Irish Greyhound, only rendered more thin and delicate by the influence of climate. There is a variety of this species, which is called the HIGHLAND GREYHOUND. It is very large, strong, deep chested, covered with long rough hair, and has the scent and sagacity of the bloodhound This kind has become exceedingly scarce.

THE NEWFOUNDLAND DOG.

THIS animal, which came originally from the island whence it derives its name, has a remarkably pleasing countenance, is exceedingly docile, and of great size and sagacity. In their native country, they are extremely useful to the settlers on the coast, who employ them to bring wood from the interior. Three or four of them, yoked to a sledge, will draw three hundred weight of wood for several miles. In the performance of this task they are so expert as to need no driver. After having delivered their load, they will return to the woods with the empty sledge, and are then rewarded by being fed with dried fish.

The feet of this Dog are more palmated than usual; which structure enables it to swim very fast, to dive easily, and to bring up any thing from the bottom of the water. It is, indeed, almost as fond of the water as if it were an amphibious animal. So sagacious is it, and so prompt in lending assistance, that it has saved the lives of numberless persons, who were on the point of drowning; and this circumstance, together with its uniform good temper has justly rendered it a universal favourite.

Volumes have been filled with anecdotes of the sagacity and affection of dogs, and as many more might be filled. We will confine ourselves to a few, in addition to those which we have already given.

"A grocer in Edinburg had a Dog, which for some time amused and astonished the people in the neighbourhood. A man who went through the streets ringing a bell and selling penny pies, happened one day to treat this Dog with a pie. The next time he heard the pieman's bell, the Dog ran to him with impetuosity, seized him by the coat, and would not suffer him to pass. The pieman, who understood what the animal wanted, showed him a penny, and pointed to his master, who stood at the street-door and saw what was going on. The Dog immediately supplicated his master by many humble gestures and looks. The master put a penny into the Dog's mouth, which he instantly delivered to the pieman, and received his pie · and this traffic between the pieman and the grocer's Dog continued to be daily practised for many months.

"At a convent in France, twenty paupers were served with a dinner at a certain hour every day. A Dog belonging to the convent did not fail to be present at this regale, to receive the scraps which were now and then thrown to him. The guests, however, were poor and hungry, and of course not very wasteful; so that their pentioner did little more than scent the feast of which he would fain have partaken. The portions were served by a person, at the ring of a bell, and delivered out by means of what in religious houses is called a *tour;* a machine like the section of a cask, that by turning round upon a pivot, exhibits whatever is placed on the concave side, without discovering the person who moves it. One day, this Dog, which had only received a few scraps, waited till the paupers were all gone, took the rope in his mouth, and rang the bell. His stratagem succeeded. He repeated it the next day with the same good fortune. At length the cook, finding that twenty-one portions were given out instead of twenty, was determined to discover the trick: in doing which he had no great difficulty; for, lying in wait, and noticing the paupers as they came for their different portions, and that there was no intruder except the Dog, he began to suspect the truth; which he was confirmed in when he saw the animal continue with great deliberation till the visiters were all gone; and then pull the bell. The matter was related to the community, the Dog was permitted to ring the bell every day for his dinner, on which a mess of broken victuals was always afterward served out to him.

"Mr. C. Hughes, a country comedian, had a wig which generally hung on a peg in one of his rooms. He one day lent the wig to a brother player, and some time afterward called on him. Mr. Hughes had his Dog with him, and the man happened to have the borrowed wig on his head. Mr. Hughes stayed a little while with his friend; but, when he left him, the Dog remained behind. For some time he stood, looking full in the man's face; then, making a sudden spring, he leaped on his shoulders, seized the wig, and ran off with it as fast as he could; and, when he reached home. he endeavoured, by jumping, to hang it up in its usual place. The same Dog was one afternoon passing through a field near Dartmouth, where a washer-woman had hung her linen to dry. He stopped and surveyed one particular shirt with attention; then seizing it, he dragged it away through the dirt to his master, whose shirt it proved to be.

"In the year 1791, a person went to a house in Deptford, to take lodgings, under pretence that he had just arrived from the West Indies; and after having agreed on the terms, said he should send his trunk that night, and come himself the next day. About nine o'clock in the evening, the trunk was brought by two porters, and was carried into a bedroom. Just as the family were going to bed, their little house Dog, deserting his usual station in the shop, placed himself close to the chamber-door where the chest was deposited, against which it scratched and barked with redoubled fury. They attempted to get the Dog out of the room, but in vain. Calling in some neighbours, and making them eyewitnesses of the circumstance, they began to move the trunk about; when they quickly discovered that it contained something that was alive. Suspicion becoming very strong, they were induced to force it open; when to their utter astonishment, they found in it their new lodger, who had been thus conveyed into the house with the intention of robbing it.

"A Dog that had been the favourite of an elderly lady, discovered, some time after her death, the strongest emotions at the sight of her picture, when it was taken down to be cleaned. Before this he had never been observed to notice the painting. Here was evidently a case of passive remembrance, or of the involuntary renewal of former impressions. Another Dog, the property of a gentleman that died, was given to a friend in Yorkshire. Several years afterward, a brother from the West Indies paid a short visit at the house where the Dog then was. He was instantly recognized, though an entire stranger, in consequence, probably, of a strong personal likeness. The Dog fawned upon him, and followed him with great affection to every place where he went."

At the convent of the Great St. Bernard the sagacity and courage of the Dog are employed for a noble purpose. The benevolent monks of that convent have a fine breed of Dogs, the Alpine spaniel, which they use to discover travellers, who, in passing the Alps, have fallen benumbed on the snow, or into the clefts, which often occur. "It is then that the keen scent and exquisite docility of these admirable Dogs are called into action. Though the perishing man lie ten or even twenty feet beneath the snow, the delicacy of smell with which they can trace him affords a chance of escape. They scratch away the snow with their feet; they set up a continual hoarse and solemn bark, which brings the monks and labourers of the convent to their assistance. To provide for the chance that the Dogs, without human help, may succeed in discovering the unfortunate traveller, one of them has a flask of spirits round his neck, to which the fainting man may apply for support; and another has a cloak to cover him. These wonderful exertions are often successful; and even when they fail of restoring him who has perished, the Dogs discover the body, so that it may be secured for the recognition of friends; and such is the effect of the temperature, that the dead features generally preserve their firmness for the space of two years. One of these noble creatures was decorated with a medal, in commemoration of his having saved the lives of twenty-two persons, who, but for his sagacity, must have perished."

THE CAT

Though an animal of prey, is a useful domestic. It is neither wanting in sagacity nor sentiment; but its attachments are stronger to places than to persons. The form of its body corresponds with its disposition. The Cat is handsome, light, adroit, cleanly, and voluptuous: he loves ease, and searches out the softest furniture in order to repose on, and rest himself.

Cats go with young fifty-five or fifty-six days; they are not so prolific as dogs, and their usual number is four, five, or six. Young Cats are gay, lively, pretty, and would be very proper to amuse children, if the strokes of their paws were not to be feared. Their disposition, which is an enemy to all restraint, renders them incapable of a regular education. We are told, nevertheless, of the Greek Friars of Cyprus having taught Cats to hunt, take, catch, and destroy the serpents with which that island was infested; their scent, which in the dog is an eminent quality, is far from being good, and therefore they do not pursue animals which they no longer see; they do not hunt, but wait and attack them by surprise.

The most immediate physical cause of this inclination, which they have to spy out, and surprise other animals, comes from the advantage which they receive from the particular conformation of their eyes. The pupil, in man, as well as in the greater part of animals, is capable of a certain degree of contraction and dilatation; it enlarges a little when there is no light, and contracts when it becomes too strong.

In the eye of the Cat, and of nocturnal birds, this contraction and dilatation are so considerable, that the pupil, which in obscurity is large and round, becomes, in broad day, long and narrow like a line; and for this reason these animals see better during the night than during the day, the form of the pupil being always round when it is not constrained. During the day, there is a continual contraction in the eyes of the Cat, and it is only by effort, as it were, that he sees in a strong light; whereas at twilight the pupil resuming its natural form, he sees perfectly, and profits from this advantage to know, attack, and surprise other animals. The whiskers, too, appear to aid him in the chase, by possessing qualities analogous to those of the antennæ of insects.

Cats seem to have a natural dread of water, cold, and bad smells. They are very fond of perfumes, and gladly suffer themselves to be taken and caressed by persons who use them. The scent of valerian has so powerful and so delicious an effect on them, that they appear transported with pleasure by it; and in order to preserve this plant in gardens, it is common to surround it with a close fence. Cats will smell it from afar, will run and rub themselves against it, and will pass and repass so often over it, as to destroy it in a short time.

As they are exceedingly cleanly, and as their coat is always dry and shining, their hair easily electrifies; and sparks are seen to come from it, when rubbed with the hand in any dark place. Their eyes shine in the dark, almost like diamonds, and reflect outwardly during the night, the light which they may be said to have imbibed during the day.*

Among our ancestors the Cat was held in high estimation for his mousing qualities. In the tenth century, Hoel Dha, or Howel the Good, prince of Wales, enacted laws to regulate the price of animals. The price of a Kitten before it could see was one penny; from the time it could see until it caught a mouse, two pence; when it commenced mouser, four pence. In those days, these were considerable sums. It was, however, required, that the animal should be perfect in its senses of seeing and hearing, be a good mouser, have the claws whole, and be a good nurse; and if it failed in any of these qualities, the seller was to forfeit to the buyer the third part of its value. If any one stole or killed the Cat that guarded the prince's granary, he was to forfeit a milch ewe, its fleece, and lamb; or as much wheat as when poured on a Cat, suspended by its tail (the head touching the floor,) would form a heap high enough to cover the creature to the tip of its tail.

THE WILD CAT.

In this climate, we know but one species of the *Wild Cat;* and it appears from the testimony of travellers, that this species is found in almost all climates, without any great variety. There were some of them on the continent of the New World before it was discovered; a huntsman carried one which he had found in the woods to Christopher Columbus; this Cat was of the common size, the hair of a dark gray, with the tail very long, and very strong. There are some of the same sort of Wild Cats in Peru, though they had no tame ones; and there are also some in Canada, in the country of the Illinois, &c. They have been seen in several parts of Africa, as in Guinea, at the Gold Coast; at Madagascar, where the original inhabitants had even domestic Cats; at the Cape of Good Hope where Kolben says, there are also, though in a small number, Wild Cats of a blue colour; and these blue, or rather slate coloured Cats, are found again in Asia.

In this country the WILD or WOOD CAT, is the fiercest and most destructive of our predatory animals, and may not improperly be denominated the British tiger. At its full growth, it stands a foot and a half in height, measures nearly two feet round the body, and, including the tail which is half a yard long, it is about four feet in length. A larger head, more vividly sparkling eyes, and a more agile and daring demeanour, distinguish it from the domestic species. Its colour is of a yellowish brown; the head, back, sides, and tail, being marked transversely with bars of deep brown and black. It is a very solitary animal. Merely to wound them is dangerous, as they will turn furiously on their assailant, and they have strength enough to render themselves formidable. In spite, however, of their strength and agility, they are often vanquished by a much smaller enemy. That enemy is the Pine Martin. The combat between the two animals is well described by the author of a recent valuable work, The British Naturalist. " The onset," says he, " is one of some skill on both sides. The aim of the Cat is to pounce with her paws upon the head of the martin, in such a way as that the claws may destroy or wound its eyes, while her teeth are embedded in its neck; and if she can accomplish that, the fate of the martin is decided. That, however, if done at all, must be done in a moment, and if it be lost, there is no repairing the mistake. The spring of the Wood Cat is larger than that of her opponent, and the Cat takes up her position so that she shall, if possible, alight upon his head with her full spring and impetus. To distract her attention, he keeps moving his head from side to side, and if he succeeds in his object, he rushes to close quarters by a side movement. If the spring of the Cat takes proper effect, there is a struggle, but not of long duration; and it is the same with the opposite result, if the Cat miss and the martin fasten, during the short pause of exhaustion after the spring. Here we may notice another curious feature in the economy of all the feline race. It has been remarked even of the most powerful of them, that if they miss their object when they spring, they sneak cowardly away, and do not return to the attack for some time, if, indeed, they return at all. Now the fact is, that it is not cowardice, but exhaustion; the gnashing with the teeth and the talons seems to be the reaction by which the motion of the spring is balanced, and the tone of the animal kept up; and if it fail in that, it takes a while to recover the use of its springing muscles. Probably the violence both of the spring and the exhaustion are connected in some other way or other with the electric state of the body; but that is a point not easily to be settled. Should both miss, the contest is renewed, and seldom in the observed cases (which are not indeed very numerous,) given up until the one be killed; and in a protracted contest, the martin is always the victor, as the Cat is first exhausted by the greater weight of her body, and the violence of her leaps." One of these combats was witnessed, in 1805, in a secluded dell in Argyleshire. "The contest there lasted for more than half an hour, and both combatants were too intent on each other's destruction, to shun or fear observation, at last, however, the martin succeeded in falling upon the right side of the Cat's neck, and jerking his long body over her, so as to be out of the reach of her claws; when, after a good deal of squeaking and struggling, by which the enemy could not be shaken off, the martial achievements of Puss were ended in the field of glory."

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* Recent observations render it very doubtful whether the eye of the Cat possesses an inherent phosphorescent lustre. It appears that to render the Cat's eye luminous, light must be present; though the slightest ray will produce the shining effect.—EDITOR.

A singular animal has recently been discovered in the island of Java, which seems the connecting link between the Cat and ferret tribes. It has the lengthened muzzle and slender body of the latter, with the sheathed and retractile claws of the former. Dr, Horsefield denominates it Prionodon gracilis.

In general it may be remarked, that of all the climates of the inhabited earth, those of Spain and Syria are the most favourable to the beautiful varieties of nature. The sheep the goats, the dogs, the Cats, the rabbits, &c. of those countries have the finest wool, the most beautiful and the longest hair, the most agreeable and the most varied colours. The colour of the Wild Cat, and its hair, like those of most other wild animals, are rather coarse; when tamed, the latter becomes softer, the former more variegated; and in the favourable climate of Khorasan and Syria, the latter becomes longer, finer, more copious, the former uniformly softened; the black and red changing into a transparent brown, and the dark brown into an ash-gray. By comparing a Wild Cat of our forests with one of those of Khorasan or Syria, we shall find that the only difference between them consists in this shaded variety of colours; and as these animals have more or less white upon the belly and the sides, it is easy to conceive, that, in order to have Cats entirely white, and with long hair, such as we properly term *Cats* of *Angora*, we have only to select from this race those which are most white on the belly and the sides, and to unite them together, in like manner as is done with rabbits, with dogs, with goats, with stags, with deer &c. In the province of Pe-chi-ly, in China, there are Cats with long hair, and pendent ears, of which the Chinese ladies are exceedingly fond. These domestic Cats, with pendent ears, of which we do not possess a more ample description, are, doubtless, still more remote than those with straight ears, from the race of the Wild Cat, which, nevertheless, is the original and primitive race of all Cats.

CHAPTER IX.

Of certain intermediate Animals between wild and domestic —The Stag, or Red Deer—Of the Fallowdeer, the Roebuck, &c.

THE STAG.

Is one of those mild, tranquil, innocent animals, which seem as if they were created solely to adorn and animate the solitude of the forests, and to occupy, remote from man, the peaceful retreats of Nature.

His light and elegant form; his flexible yet nervous limbs; his head rather adorned, than armed, with a living substance, which, like the branch of a tree, is every year renewed; his size, his swiftness, his strength, sufficiently distinguish him from the rest of the inhabitants of the forest.

The old Stags shed their horns first, which happens about the end of February or the beginning of March. Stags in their seventh year do not undergo this change till the middle or the end of March; nor do those in their sixth year, till the month of April.

After they have shed their horns, they separate from each other; the very young ones alone associating together. They remain no longer in covert; they seek the beautiful parts of the country, the groves, and the open coppices, where they remain all the summer, till they recover the antlers which were wont to adorn their brows.

and, during this season, they carry their heads l
fear of striking them against the branches; for th
exceedingly tender till they arrive at perfection.
horns of the oldest Stags are scarcely half repaired
month of May; nor do they attain their full leng
hardness till about the end of July. The horns
young Stag are very late shed, and very late rec
but when these are completely lengthened, and
come quite hard, they rub them against the trees, i
to clear them from the scurf with

The Hinds, or females, carry their
and a few days. They are not all
there is in particular, which is alwa
retains this appellation no longer than till it is six m
old; then the knobs begin to appear, and it takes the
of a Knobber, which it bears till these knobs are le
ened to so many points, whence they are termed Pri
or Brockets. It does not quit its mother early, th
grows fast, but follows her all the summer. In wi
Hinds, the Knobbers, the Prickets, and the youn
resort to the herd, forming troops, which are mor
rous in proportion as the season is more severe. In
they divide, the Hinds retiring to bring forth the
and at this time there are scarcely any but the
and the young Stags which go together. In gener
Stags are inclined to remain with each other, and to roam abroad in companies; it is only from fear or necessity that they are ever found dispersed or separated.

The growth of the horns appears to depend on the redundancy of the fluids, and has a near connexion with the production of the seminal fluid, since, when castrated, the horns of the Stag cease to grow. The beauty of this, as indeed of every part, depends much upon their food; for a Stag which lives in a plentiful country, where he feeds at his ease, where he is neither disturbed by men nor dogs, where, after having eaten without interruption, he may lie down and ruminate in quiet, has always a beautiful head, high, open, palmated, large, and well adorned at top, broad and curled at bottom, with a great number of long and strong antlers; whereas, in a country where he has neither sufficient food nor repose, his head will be in these respects the reverse, insomuch that it is no difficult matter to distinguish, by the horns of a Stag, whether or not he inhabits a plentiful and quiet country, and whether or not he has been well nourished.

The branches which sprout from the head of the Stag, in their make and growth, resemble those of a tree; their substance also is, perhaps, more of the nature of wood than of bone: it is, as it were, a vegetable grafted upon an animal, which partakes of the nature of both, and forms one of those shades by which Nature always approximates two extremes.

The Stag passes his whole life in the alternatives of plenitude and want, of corpulence and leanness, of health and sickness, without having his constitution much affected by the violence of the change; nor is the duration of his life inferior to that of other animals which are not subject to such vicissitudes. As he is five or six years in growing, so he generally lives seven times that number of years; that is, thirty-five or forty years. What has been reported, therefore, concerning the prodigious longevity of the Stag, is without any good foundation, though supported by the story of one which was taken by Charles VI. in the forest of Senlis, with a collar round his neck, whereon was inscribed, "Cæsar hoc me donavit:" and people chose rather to believe that this animal had lived a thousand years, and had received this collar from a Roman emperor, than to conclude that he might come from Germany, where the emperors have always assumed the title of Cæsar.

The horns of the Stag continue to increase in bulk and height from the second year to the eighth; they remain beautiful, and much the same, during their vigour of life; but as their body declines with age, so do their horns decline also.

It is but seldom that our Stags have more than twenty or twenty-two antlers, even when their head is in its most beautiful state; and, as the size of the Stag's head depends on the quantity of his food, so the quality of his horns is found also to depend on the kind of nourishment he receives; it is, like the wood of the forest, large, soft, and light, in moist and fertile countries; and, on the contrary, short, hard and heavy, in such as are dry and barren.

The most common colour of the Stag is yellow, though there are many found of a brown, and many of a red colour. White Stags are much more uncommon, and seem to be Stags become domestic. The colour of the horns, like that of the hair, seems in particular to depend on the nature and age of the animal. The horns of the young Stags are whiter than those of the old ones. Of those Stags also whose hair is of a light yellow, the horns are often of a sallow hue, and disagreeable to the eye.

This animal seems to have good eyes, an exquisite smell, and an excellent ear. When he would hearken to any thing, he raises his head, pricks up his ears, and then he hears from a great distance. When he issues from a little coppice, or some other spot half covered, he stops, in order to take a full view around him, and then snuffs up the wind, in order to try whether he can discover the scent of aught that may give him disturbance. Though naturally rather simple, he is yet far from being destitute of curiosity and cunning. If any one whistles, or calls aloud to him from a great distance, he instantly stops short, and gazes with fixed attention, with even a kind of admiration; and if he sees neither arms nor dogs, he passes along quietly, and without altering his pace. With equal tranquillity and pleasure he seems also to listen to the shepherd's pipe, or flageolet; and the hunters, in order to embolden them, sometimes use these instruments. In general, he fears men much less than he does dogs, and entertains neither distrust nor artifice, but in proportion as he is disturbed. He eats slowly, chooses his food, and seeks afterward to repose himself, that he may ruminate at leisure, though the act of rumination he does not seem to perform with the same ease as the ox; nor is it without undergoing much violence that the Stag can throw up the food contained in his first stomach. He seldom drinks in the winter, and seldomer still in the spring.

In England, the number of Red Deer is diminishing. Windsor Forest was disafforested in 1814, and an immense slaughter of the Deer took place. In Scotland also the race has been thinned. "The Red Deer," says the author of The Menageries, "are now far from numerous, and are seldom if ever seen on the Grampians. This has no doubt arisen from the grazing of sheep and cattle, by which the seclusion the Red Deer are so fond of has been broken in upon, both in the mountains and in the valleys. As the more lucrative occupation of the soil extends into the remoter districts, the race must further and further decrease: nor is the period at which they will be wholly extinct, in all probability, very distant. Red Deer are yet found in Mar Forest and Glenartney; and there are still a considerable number in the west parts of Ross and Sutherland; though the extensive and judicious improvements to which, very much to the general advantage of the country, have recently been effected under the Marquis of Stafford, have made them more rare than they were about the end of the last century. Now, unless by a person whom long observation has rendered familiar with their haunts, the country may be traversed without seeing ever one. From their fleetness, and the nature of the ground on which they are found, horses and hounds are of no direct use in the chase of them, as the steed would be required to leap precipices of fifty feet, instead of gates of five bars; and the dogs would be constantly tumbling into gullies and ravines, which are cleared by the Deer at one bound. They cannot be driven 'with hound and horn,' as was the case in the days of 'the barons bold;' neither can they be collected and hemmed in, after the somewhat similar manner in which the Highland chiefs conducted their sports. Still there are a few places where a person who has been habituated to the occupation, and who does not fear to ground himself in a morass, and will submit to the other pleasures of 'stalking,' may occasionally find a Roe. The most certain time is when the state of the weather is such as to force the herds to the well-heads, where there is brushwood near to cover the marksman.

"The largest forest set apart for Red Deer which exists in Scotland, is the forest of Atholl, where a hundred thousand English acres are given up to them; and upon this large tract neither man, woman, child, sheep, nor oxen are allowed to trespass, with the exception of those parties who are permitted to partake of the mysteries of Deer-stalking.

"The sportsmen, seldom more than two in each party, set forth, accompanied by a keeper, who acts as general; and they are followed by two or three Highlanders, carrying spare rifles, and leading the Deer hounds. The party is preceded by the keeper, who is about twenty or thirty yards in advance, attentively examining the face of every hill with his telescope, to discover the Deer that may be grazing upon it. Upon detecting a herd, a council of war is held, and the plan of operations determined upon. It is necessary to proceed with much caution, as, independent of the strong sense of smelling, seeing, and hearing, which these animals are endued with, there is always one of the herd, generally a Hind, or female Deer, stationed as sentinel; and, upon the least suspicion being excited, the signal is given, and they are off. Great care is therefore taken, in the approach, to advance up the wind, and to conceal the party by taking advantage of the inequalities of the ground, preserving the strictest silence. It frequently happens that the sportsmen are obliged to make a circuit of some miles to get near them undetected; at other times, they may find that they are in a situation from which they cannot extricate themselves unseen; in that case they must lie down till the herd move into a more favourable position for their purpose. Having arrived as near to them as is possible without detection, the sportsmen, after a careful examination of their rifles, still keeping themselves as much concealed as possible, fire, and continue firing and loading as long as they remain within practicable distance. Eleven out of a herd of fifteen have been known to be killed by one person: the accidental circumstance of an echo, the sound being heard on one side and the flash appearing on the other, so puzzled the Deer, that they stood still, till the four last gathered courage and made off. When wounded, large hounds, of a breed between the greyhound and the bloodhound, are let loose upon the track of their blood, and they never leave it till they have brought the animal to bay, generally in some stream, where they keep him till the sportsman comes up and dispatches him by shooting him through the head. It is necessary for the hunter to be very cautious in approaching him when at bay, and always to keep him down the stream from where he stands; for if he breaks his bay, he is very likely to attack his pursuer, gore him with his horns, or trample him to pieces with his feet. This is of all European sports the most noble* and interesting, as any person who has tried and understands it will testify, heightened as it is by the wildness and beauty of the scenery, the pure invigorating effect of the mountain air, the picturesque dress and appearance of the Highlanders, and the eager interest they take in a pursuit so peculiar to their own hills, and so congenial to their habits."

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* That this sport is attractive and interesting may be believed; but to call it *noble* is surely an abuse of words. The chase of the lion or the tiger is, indeed, a noble occupation, because danger is braved and good is achieved. But how can the epithet of *noble* be applicable to a sport which requires only cunning and caution to carry it on, and in which no peril is encountered, except through the stupidity of the sportsman?—EDITOR.

THE FALLOW DEER.

No two animals can be more nearly allied than the stag and the Fallow-deer; and yet no two animals keep more distinct, or avoid each other with more fixed animosity. They are never seen to herd in the same place; it is even rare, unless they have been transported thither, to find Fallow-deer in a country where stags are numerous. They seem to be of a nature less robust and less savage than the stag; they are found but rarely wild in the forests, and are bred up in the parks, where they are, as it were, half domestic.

England is the country of Europe where they most abound; and there their flesh, which dogs are observed to prefer to that of all other animals, is held in no small estimation. It seems to be an animal formed for a temperate climate; for it is never found in Russia, and very rarely in the forests of Sweden, or in any other northern country; and as the Fallow-deer is an animal less savage, more delicate, and, indeed, it may be added, more domestic than the stag, it is likewise subject to a greater number of varieties. Besides the common Deer, and the white Deer, we know of several other kinds still; the Deer of Spain, for example, which are always as large as stags, but whose neck is more slender, whose colour is more obscure, and whose tail is rather black than white underneath, and longer than that of the common Deer; the Deer of Virginia, which are almost as large as those of Spain; other Deer, whose forehead is compressed and flattened between the eyes, whose ears and tail are longer than those of the common Deer, and of whose hind legs the hoofs are marked with a white spot; and others, which are spotted or streaked with white, black, and yellow; and others still, which are entirely black.

The horns of the Buck, like those of the stag, are shed every year, and take nearly the same time for repairing.

It frequently happens that a herd of Fallow-deer is seen to divide into parties, and to engage each other with great ardour. Each seems desirous of gaining some favourite spot of the park for pasture, and of driving the vanquished party into the coarser and more disagreeable parts. Each of these factions has its particular chief, namely, the oldest and the strongest of each herd. These lead on to the engagement; and the rest follow under their direction. Their combats are singular enough, from the disposition and conduct by which their mutual efforts seem to be regulated. They attack with order, and support and assault with courage; they come to the assistance of each other; they retire, they rally, and never yield the victory upon a single defeat. The combat is renewed every day, till at length the most feeble side is obliged to give way, and is content to escape to the most disagreeable part of the park, where alone they can find safety and protection. The Fallow-deer may easily be brought to live in stables, and seems to acquire an affection for the horse. One which was kept at Newmarket used to delight in galloping round the course with the racers while the jockeys were exercising them.

From the age of two years, till that of fifteen or sixteen, the Fallow-deer is in a condition to produce, and, in fine, resembling the stag in all its natural habits, the greatest difference we find between these two animals, is in the duration of their lives. From the testimony of hunters, it has been mentioned, that the stag lives to the age of thirty-five or forty; and, on the same authority, it is asserted, that the Fallow-deer lives but about twenty years; and as in size the latter is smaller than the stag, so it is probable, that in growth he is somewhat quicker.

Besides the nostrils, the Fallow-deer is furnished with two spiracula, or breathing places, one at the inner corner of each eye, communicating with the nose. By this means it continues to breathe while drinking, which it could not otherwise do, as it plunges its nose deep under water, and retains it there for a considerable time. These spiracles, it is probable, may also be useful to the animals when chased, by enabling it to respire more fully and easily.

THE ROEBUCK.

The stag, as being the most noble among the tenants of the woods, inhabits the most secret part of the forest, where the spreading branches form a lofty covert; while the Roebuck, as being of an inferior species, contents himself with a more lowly residence, and is seldom found but among the thick foliage of young trees and shrubs

But, if this animal is less noble, less strong, and less elevated in stature he is, however, possessed of more grace, more vivacity, and even more courage, than the stag. Though but a very small animal, yet, when his young are attacked, he faces even the stag himself, and not unfrequently comes off victorious; he is more gay, more handsome,more active; his shape is more full and more elegant, and his figure is more agreeable; his eyes, in particular, are more brilliant, and more animated; his limbs are more supple, his movements quicker; and possessed of equal vigour and agility, he bounds without effort.

So fleet is the Roebuck, that it is nearly impossible to hunt him down, and such are his strength and wind that he can run unexhausted for several hours. Should he, however, be at length pressed too closely, he resorts to artifice. He retraces his footsteps, backward and forward, till his turnings and windings have confused the scent; and, when this is accomplished, he springs aside at one vast bound, and lies flat on his belly among the grass and bushes till the dogs have gone by; nor does he make the least motion even should they pass close to his nose.

The Roebuck differs from the stag, not only in superior cunning, but also in his natural appetites, his inclinations, and his whole habits of living. Instead of herding together like the latter, the species of the former live in separate families: the sire, the dam, and the young ones, form of themselves a little community, nor do they ever admit a stranger into it. All other animals of the deer kind are inconstant in their affection. The Roebuck never forsakes his mate; and, as they have been generally bred up together, the male and female form for each other the strongest attachment.

The female of this species goes with young five months and a half, and brings forth about the end of April, or the beginning of May. The hind goes more than eight months; and this is a circumstance which alone suffices to prove, that these animals are of a species so different, that they can never intermix, nor produce together an intermediate race. The female separates herself from the male, when she is about to bring forth, retiring into the thickest part of the woods, in order to avoid the wolf, which is her most dangerous enemy. At the expiration of about ten or twelve days, the Fawns, of which there are generally two at a birth, attain strength enough to follow her. When she is threatened with any peril, she hides them in some deep thicket, offers herself to the danger, and allows herself to be chased in their stead.

The Fawns continue to follow the Buck and the Doe eight or nine months in all; and, upon separating, their horns begin to appear, as those of the stag, the first year, simple, and without antlers. These they shed at the latter end of autumn, and renew during the winter.

In the stag, the fallow deer, and the Roebuck, there are two bony eminences, on which their horns grow, which begin to shoot at the end of five or six months, and which, in a little time longer, arrive at their full growth; and far from enlarging themselves as the animal advances in age, they diminish, and are even the most certain index for discovering, every year, the advanced age of all the species.

As the female goes only five months and a half with young, and as the growth of the young Roebuck is quicker than that of the young stag, so his life is shorter, and does not appear to extend beyond twelve or fifteen years, at the farthest. The Roebucks remain in winter in the thickest coppices, and live on briars, broom, heath, &c. In spring they repair to the more open groves, and brouse upon the buds and young fresh leaves of almost every tree; and this warm food, fermenting in their stomachs, inebriates them in suck a manner, that they are then easily surprised.

The Roebuck is the smallest of the British deer. The species is now nearly extinct in England. They are somewhat more plentiful in the highlands of Scotland.

It appears that this species, which is not so numerous as that of the stag, and which is very seldom to be found in many parts of Europe, is much more abundant in America. There we hear only of two sorts, the red, which is the larger, and the brown, which is the smaller; and, as they are more commonly found in the northern than in the southern parts of that continent, so it may be presumed, that they differ more from each other there than they do in Europe. In Louisana, for instance, they are extremely common, and much larger than in France; they are also found at Brazil; for the animal which is there denominated the *Cujuacuapara*, differs not from the European Roebuck more than the Canadian stag differs from the French stag.

CHAPTER X.

Of Wild Animals—The Hare—The Alpine Hare—The Ogotona Hare—The Calling Hare—and the Rabbit.

THE HARE.

Those species of animals which are the most numerous, are not always the most useful: but the species of the Hare, and of the rabbit, are advantageous to us, both as to their number and their utility. Hares are universally and abundantly spread over the face of the whole earth; and rabbits, though they originated only in particular climates, do yet multiply so prodigiously in almost every place to which they are transported, that it is no longer possible to extirpate them, and no small art is required in order to diminish their number. Some species of Hares are migratory. They move, in flocks of five or six hundred, and often to a great distance, in search of food.

In those districts which are reserved for the chase, four or five hundred Hares are killed in the course of perhaps one day's sport. These animals multiply amazingly; they are in a condition to engender in all seasons, and before the first year of their life is expired. The females do not go above thirty or thirty-one days with their young. They produce three or four, and, as soon as these are brought forth, are again ready to receive the male; they likewise receive him while they are pregnant, and, by a particular formation of their genitals, are often found to have a superfœtation.

The young ones are brought forth with their eyes open; the mother suckles them for the space of twenty days; after which they separate themselves from her, and provide for their own subsistence; they do not withdraw themselves far from each other, nor from the place where they first drew breath; yet they live in solitude, and each composes for itself a form, at a little distance, perhaps sixty or eighty paces. Thus when we find a young Leveret in one place, we are almost sure of finding one or two more in the neighbourhood. They feed more by night than by day; and their favourite articles of provision are, herbs, roots, leaves, fruit, and grain; but above all, such plants as yield a milky juice They even eat the bark of trees in winter. When they are reared at home, they are fed with lettuce and roots; but the flesh of these domestic Hares is always of a bad flavour.

Hares sleep much, but always with their eyes open. They have no eyelashes, and seem to have but bad eyes. The eyes, however, are so prominent, that they can see both before and behind. Their hearing is exceedingly acute, and their ears are very large compared with the size of their body. They move these long ears with great facility, and use them as a helm, in order to direct their course, which is so rapid, that they easily outstrip all other animals. As their fore legs are much shorter than their hind legs, they can more easily ascend than descend; for which reason, when they are pursued, their first object is to gain, if possible, some mountain. Their motion in running is a kind of gallop; they proceed without making any noise, because their feet are plentifully covered with hair, even underneath; and perhaps they are the only animals which have hair growing within their mouths.

Hares live not above seven or eight years. They pass their lives in solitude and in silence; and never are known to exert their voice, but when they are forcibly laid hold of, tormented, or wounded. They are by no means so wild as by their habits might be supposed: they are gentle, and susceptible of a species of improvement. As they have a good ear, as they rest on their hind feet of their own accord, and use their fore legs like arms, some have been so tutored as to beat a drum, to gesticulate in cadence, &c.

Hares may be domesticated, and they then display sagacity, affection, and no small share of curiosity. Cowper, the poet, has given an amusing account of three of them, which he kept for some years: "I undertook," says he, "the care of three, which it is necessary that I should here distinguish by the names I gave them: Puss, Tiney, and Bess. Notwithstanding the two feminine appellatives, I must inform you that they were all males. Immediately commencing carpenter, I built them houses to sleep in, each had a separate apartment, so contrived that their ordure should pass through the bottom of it; an earthen pan placed under each received whatever fell, which being duly emptied and washed, they were thus kept perfectly sweet and clean. In the day time they had the range of a hall, and at night retired each to his own bed; never intruding into that of another.

"Puss grew presently familiar, would leap into my lap, raise himself upon his hinder feet, and bite the hair from my temples. He would suffer me to take him up and carry him about in my arms, and has more than once fallen fast asleep upon my knee. He was ill three days, during which time I nursed him, kept him apart from his fellows, that they might not molest him, (for, like many other wild animals, they persecute one of their own species that is sick,) and by constant care, and trying him with a variety of herbs; restored him to perfect health. No creature could be more grateful than my patient after his recovery; a sentiment which he most significantly expressed by licking my hand, first the back of it, then the palm, then every finger separately, then between all the fingers, as if anxious to leave no part of it unsaluted; a ceremony which he never performed but once again upon a similar occasion. Finding him extremely tractable, I made it my custom to carry him always after breakfast into my garden, where he hid himself generally under the leaves of a cucumber vine, sleeping or chewing the cud until evening; in the leaves also of that vine he found a favourite repast. I had not long habituated him to this taste of liberty, before he began to be impatient for the return of the time when he might enjoy it. He would invite me to the garden by drumming upon my knee, and by a look of such expression as it was not possible to misinterpret. If this rhetoric did not immediately succeed, he would take the skirt of my coat between his teeth, and pull at it with all his force. Thus Puss might be said to be perfectly tamed, the shyness of his nature was done away, and, on the whole, it was visible, by many symptoms which I have not room to enumerate, that he was more happy in human society than when shut up with his natural companions.

"Not so Tiney; upon him the kindest treatment had not the least effect. He too was sick, and in his sickness had an equal share of my attention, but if, after his recovery, I took the liberty to stroke him, he would grunt, strike with his fore feet, spring forward, and bite. He was, however, very entertaining in his way; even his surliness was matter of mirth, and in his play he preserved such an air of gravity, and performed his feats with such a solemnity of manner, that in him too I had an agreeable companion.

"Bess, who died soon after he was full grown, and whose death was occasioned by his being turned into his box, which had been washed, while it was yet damp, was a Hare of great humour and drollery. Puss was tamed by gentle usage; Tiney was not to be tamed at all; and Bess had a courage and confidence that made him tame from the beginning. I always admitted them into the parlour after supper, when, the carpet affording their feet a firm hold, they would frisk, and bound, and play a thousand gambols, in which Bess, being remarkably strong and fearless, was always superior to the rest, and proved himself the Vestris of the party. One evening the cat, being in the room, had the hardiness to pat Bess upon the cheek, an indignity which he resented by drumming upon her back with such violence, that the cat was happy to escape from under his paws and hide herself.

"I describe these animals as having each a character of his own. Such they were in fact, and their countenances were so expressive of that character, that, when I looked only on the face of either, I immediately knew which it was. It is said that a shepherd, however numerous his flock, soon becomes so familiar with their features, that he can, by that indication only, distinguish each from all the rest, and yet, to a common observer, the difference is hardly perceptible. I doubt not that the same discrimination in the cast of countenances would be discernible in Hares, and am persuaded that among a thousand of them no two could be found exactly similar; a circumstance little suspected by those who have not had opportunity to observe it. These creatures have a singular sagacity in discovering the minutest alteration that is made in the place to which they are accustomed, and instantly apply their nose to the examination of a new object. A small hole being burnt in the carpet, it was mended with a patch, and that patch in a moment underwent the strictest scrutiny. They seem to be very much directed by the smell in the choice of their favourites: to some persons, though they saw them daily, they could never be reconciled, and would even scream when they attempted to touch them; but a miller coming in engaged their affections at once; his powdered coat had charms that were irresistible. It is no wonder that my intimate acquaintance with these specimens of the kind has taught me to hold the sportsman's amusement in abhorrence; he little knows what amiable creatures he persecutes, of what gratitude they are capable, how cheerful they are in their spirits, what enjoyment they have of life, and that, impressed as they seem with a peculiar dread of man, it is only because man gives them peculiar cause for it.

"Bess, I have said, died young; Tiney lived to be nine years old, and died at last, I have reason to think, of some hurt in his loins by a fall; Puss is still living, and has just completed his tenth year, discovering no signs of decay, nor even of age, except that he is grown more discreet and less frolicsome than he was. I cannot conclude without observing, that I have lately introduced a dog to his acquaintance; a spaniel that had never seen a Hare, to a Hare that had never seen a spaniel. I did it with great caution, but there was no real need of it. Puss discovered no token of fear, nor Marquis the least symptom of hostility. There is, therefore, it should seem, no natural antipathy between dog and Hare, but the pursuit of the one occasions the flight of the other, and the dog pursues because he is trained to it; they eat bread at the same time out of the same hand, and are in all respects sociable and friendly.

"I should not do complete justice to my subject, did I not add, that they have no ill scent belonging to them; that they are indefatigably nice in keeping themselves clean, for which purpose nature has furnished them with a brush under each foot; and that they are never infested by any vermin."*

In general, the Hare is not devoid of the instinct necessary for its preservation, nor of sagacity sufficient to effect an escape from its enemies. It prepares for itself a form; and in winter, it chooses a spot which is exposed to the south, as in summer it does one which is situated to the north. It hides itself from view among hillocks of earth which are of the same colour as its hair. "I have seen," says Du Fouilloux, "a Hare so cunning, that, as soon as it heard the huntsman's horn, it started from its form, and, though at the distance of a quarter of a league from it, leaped to a pond, and there hid itself among the rushes, and thus escaped the pursuit of the dogs. I have seen a Hare, which, after having run above two hours before the dogs, has dislodged another Hare, and taken possession of

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[*] Puss died of old age when she was within a month of her twelfth year.

its form. I have seen others swim over three ponds, of which the smallest was not less than eighty paces broad. I have seen others, which, after having been warmly chased for two hours, have entered a sheep-cot, through the little opening under the door, and remained among the cattle. I have seen others, which, when the dogs have chased them, joined a flock of sheep in the field, and, in like manner, remained with them. I have seen others, which, when they heard the dogs, have concealed themselves in the earth. I have seen others, which have gone along one side of a hedge, and returned by the other; so that there was only the thickness of the hedge between the dogs and the Hare. I have seen others, which after they had been chased for half an hour, have mounted an old wall of six feet high, and taken refuge in a hole covered with ivy."

The nature of the soil has a great influence on these, as well as on all other animals; the Hares of the mountains are larger and fatter than those of the plains, and are also of a different colour; the former being browner on the body, and whiter about the neck than the latter, which are more inclined to red. On high mountains, and in the northern countries, they become white in the winter, and in summer recover their ordinary colour.

THE ALPINE HARE

Is about nine inches in length, with a long head and whiskers, short rounded ears, and a fur which, at first sight, seems of a bright uniform bay colour, but which, in reality, is dusky at the roots, bright bay at the ends, slightly tipped with white, and intermixed with long dusky hairs. It never resides in a more southerly latitude than the Altaic chain of mountains, near the lake of Baikal, and is found as far to the north as Kamtschatka. As the depth of the winter snow would prevent them from finding food, these Hares, in companies, collect, toward autumn, vast heaps of their favourite herbs, which they dry carefully and form into round or conoid ricks. These ricks are generally three or four feet in diameter, and sometimes of the height of a man. The horses of the Sable hunters would often perish of famine, did not these ricks afford a timely supply.

THE OGOTONA HARE

Is of a pale brown above, and somewhat white beneath. It is rather more than six inches in length, and has no tail. This species inhabits all Mongolia, and beyond the lake Baikal. It burrows in the sandy soil, or lives under heaps of stones, and forms its nest of soft grass. Like the Alpine Hare, it collects a winter store of provisions.

THE CALLING HARE

Is a solitary animal, a native of Russia, and is still smaller than the Ogotona Hare. It has a soft, long, smooth fur, of a brownish lead colour, the hairs tipped with black. This kind of Hare is easily tamed, and is very good natured. Its voice, which is like the piping of a quail, may be heard at a great distance, and is repeated three, four, and often six times successively, at equal intervals.

THE RABBIT.

Though the hare and the Rabbit are externally, as well as internally, very much alike, yet they form two distinct and separate species.

The fecundity of the Rabbit is even greater than that of the hare; and, without crediting what Wotton has advanced, that one pair only, being left together in an island, produced six thousand in one year it is certain, that these creatures multiply so prodigiously in countries which are proper for the breed, that the earth cannot furnish them with subsistence: they destroy herbs, roots, grain, fruit, and even trees and shrubs; and, were it not for the use we make of the dog and the ferret, they would reduce the country to a desert. In the reign of Augustus, they became such a nuisance to the Balearic Islands, that the inhabitants were under the necessity of petitioning the emperor to send a military force to destroy them. The Rabbit not only engenders and produces oftener than the hare, but it has more ways to escape from its enemies, and to avoid the sight of man.

This circumstance alone may suffice to prove that the Rabbit is superior to the hare in point of sagacity. Both are alike in their conformation, and both have it in their power to dig retreats for themselves. Both are tim an excess; but the one, possessed of less art, is conte ed with forming a residence on the surface of the earth, where it remains continually exposed; while the other, by a more improved instinct, takes the trouble to dig into the earth, and there to make itself an asylum; and so true is it they act in this case from a kind of reason or refle that we never see the domestic Rabbit employed i same work. Rabbits give the alarm to each othe thumping on the ground with one of th may be heard to a considerable distance.

The domestic Rabbits, like all other stic mals, vary in their colour: white, black, and grav long properly to Nature. The black Rabbits are the scarce.

These animals are able to engender and produce a age of five or six months. It is asserted, tha monly attach themselves to one particular fem ver quit her. She goes with young thirty or days, and will produce five, six, and sometimes seve eight at a birth. Like the doe-hare, she has a do matrix, and of consequence can have in her womb a same time, two separate litters. It appears, howe super-fœtations are less frequent in this species that of the hare.

A few days before they bring forth, they dig a fresh burrow, not in a right line, but in a crooked direction, at the bottom of which they make an excavation; after which they tear a quantity of hair from their bellies, and make a kind of bed for the use of their little ones. For the first two days they never quit them: they never stir abroad, unless forced to do so from necessity, and return as soon as ever they have taken their nourishment. At this season they eat much and very quick: and thus they tend and suckle their young for more than six weeks. Till then the Buck does not know them, nor does he enter the burrow which the Doe has dug. Often, even when she quits it and leaves her little ones behind, she stops up the entry to it with earth, wet with her urine; but when they begin to venture to the edge of the hole, and to eat groundsel and other herbs which the Doe pick out for them, the Buck begins to know them, to take them between his paws, to endeavour to give a gloss to their hair, to lick their eyes; and all, of them, in succession, partake equally of his cares The maternal attentions however, continue only one month, as at the expiration of that time the young are able to provide for themselves.

A gentleman, who had amused himself with raising Rabbits for many years, has communicated the following remarks:

"I began," said he, "with only one male and one female, the former white, the latter gray; and of their produce, which was very numerous, the greatest part were grey, a good number of them white, and of a mixed colour, and some few black. These animals seem to have a great respect for paternal authority; at least I judge so, from the great deference which all my Rabbits, showed for their first ancestor, whom I can always easily distinguish by his whiteness, and who is indeed the only male of that colour which I have preserved. It was to no purpose that the family augmented; those which, in their turn, became fathers, were still subordinate to him. Whenever they fought, whether on account of their females, or concerning their food, their great progenitor would run to the place of dispute with all speed, as soon as he heard the noise. No sooner did they perceive him, than every thing was presently reduced to order; and if he surprised any one of them actually assaulting another, he used to separate him from the rest, and punish him upon the spot. Another proof of his dominion over all his posterity, is, that they were accustomed to return at a whistle: whenever I gave the signal, how distant soever they might be, this old one immediately put himself at their head; and though he came first, yet he made them all file off and enter before him; nor would he go in till the last

CHAPTER XI.

Of carnivorous Animals—The Wolf—The Fox—The Arctic Fox—The Badger—The Otter—The Sea Otter—The Martin—The Pine Martin—The Pole-cat—The Ferret—The Weasel—The Ermine.

Animals which have but one stomach, and whose intestines are short, are forced like man to feed on flesh. Of this affinity, and of this truth, we shall receive certain information by a relative comparison of the size of the intestinal canal in carnivorous animals, and in those that live on herbage. We shall then find, that the differen their manner of living depends solely on the differenc their conformation, and that their nourishment is more or less solid, as the receptacle for it is more or less capacious.

Hence, however, it is not to be concluded, that those animals which live solely on herbage are, from physical necessity, as carnivorous animals are with respect to flesh, absolutely confined to one kind of sustenance. It is only to be understood, that those which have several stomachs, or very large intestines, may be supported without this substantial aliment so necessary to others. It is not meant, that they might not use it, or that if Nature had furnished them with arms, not only for the purposes of self-defence, but for those of attack and rapine, they would not have exerted them, and soon accustomed themselves to flesh and blood; since we find, that sheep, calves, goats, horses greedily eat milk and eggs, which are animal food, and that unaided by custom, they do not refuse meat which has been hashed and seasoned with salt.

Without a violation of truth, then, it may be said, that the generally predominant appetite of animals is for flesh and other solid food, and that this appetite is more or less vehement, more or less moderate, according to the particular conformation of each animal; since, on taking a full view of Nature, we find it not only in man, but in quadruped animals, in fishes, in insects, and in worms, for which indeed all flesh seems to be particularly and ultimately destined.

THE WOLF

Is one of those animals whose appetite for animal food is the most vehement, and whose means of satisfying this appetite are the most various. Nature has furnished him with strength, with cunning, with agility, with all those requisites, in a word, which fit an animal for pursuing, overtaking, and conquering its prey; and yet, with all these, the Wolf most frequently dies of hunger; for he is the declared enemy of man. Being long proscribed, and a reward offered for his head, he is obliged to fly from the habitations of man, and to live in the forest, where the few wild animals to be found, escape him either by their swiftness, or their art, or are supplied in too small a proportion to satisfy his rapacity. When pressed with hunger, however, he braves danger, and comes to attack those animals which are under the protection of man, particularly such as he can readily carry away, lambs, sheep, or even dogs themselves; for all animal food comes then equally agreeable. If this excursion has succeeded, he often returns to the charge, till having been wounded, or closely pursued by the dogs or the shepherds, he hides himself by day in the thickest coverts, and, for a while, only ventures out at night; but, at last, when his necessities are very urgent, he boldly faces certain destruction: he attacks women and children, and sometimes ventures even to fall upon men; becomes furious by his continual agitations, and ends his life in madness.

The Wolf, as well externally as internally, so nearly resembles the dog, that he seems modelled upon the same plan; and yet he only offers the reverse of the image. If his form be similar, his nature is different; and indeed they are so unlike in their dispositions, that no two animals can have a more perfect antipathy to each other. A young dog shudders at the sight of a Wolf; a dog who is stronger, and who knows his strength, bristles up at the sight, testifies his animosity, attacks him with courage, endeavours to put him to flight, and does all in his power to rid himself of a presence that is hateful to him. They never meet without either flying from, or fighting with each other. If the Wolf is the stronger, he tears and devours his prey: the dog, on the contrary, is more generous, and contents himself with his victory.

The dog, even in his savage state, is not cruel; he is easily tamed, and continues firmly attached to his master. The Wolf, when taken young, becomes tame, but never has an attachment.[*] Nature is stronger in him than education ; he resumes, with age, his natural dispositions, [illegible] returns, as soon as he can, to the woods whence he was taken. Dogs, even of the dullest kinds, seek the co[illegible]a-ny of other animals; they are naturally disposed to fo[illegible]w and accompany other creatures: the Wolf, on the co[illegible]tra-ry, is the enemy of all society; he does not even keep much company with those of his kind. When the[illegible] seen in packs together, it is not to be considered [illegible] peaceful society, but a combination for war: they te[illegible] their hostile intentions by their loud [illegible] their fierceness discover a project for at[illegible] animal, such as a stag or a bull, or for [illegible] [illegible]he formidable dog. The instant their military expedition is completed, their society is at an end; they then part, and each returns in silence to his solitary retreat. There is not even any strong attachment between the male and female; they seek each other only once a year, and remain but a few days together.

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[*] This, like most sweeping assertions, affirms too much. M. Frederick Cuvier gives a remarkable instance in which a Wolf manifested for his master all the devoted attachment of a dog. The gentleman who brought him up from a puppy, and who was going to travel, presented him to the Paris Menagerie when he was full grown. For several weeks the Wolf was inconsolable; but at length he contracted new attachments with those about him, and seemed to have forgotten his former owner. At the end of eighteen months, however, that owner returned, and, as soon as the Wolf heard the well known voice in the gardens of the Menagerie, he displayed the most violent joy, and, on being set at liberty, he hastened to his friend. An absence of three years next took place, and the Wolf was again disconsolate. The master once more returned, and though, it being evening, the Wolf's den was shut up, yet the moment the tones of his friend met his ear, he uttered the most anxious cries. On the door being opened, he darted toward the long absent person, leaped upon his shoulders, licked his face,

The difference in the duration of the pregnancy of the she Wolf, who goes with young above a hundred days, and the bitch, who does not go above sixty, proves that the Wolf and the dog, so different in disposition, are still more so in one of the principal functions of the animal economy.

The Wolf generally brings forth five or six, and sometimes even nine, at a litter. The Cubs are brought forth, like those of the bitch, with the eyes closed. The dam suckles them for some weeks, and teaches them betimes to eat flesh, which she prepares for them, by chewing it first herself. They do not leave the den where they have been littered, till they are six weeks or two months old. It is not, however, till they are about ten or twelve months old, and till they have shed their first teeth and completed the new, that the dam thinks them in a capacity to shift for themselves. Then, when they have acquired arms from Nature, and have learned industry and courage from her example, she declines all future care of them, being again engaged in bringing up a new progeny. These animals require two or three years for their growth, and live to the age of fifteen or twenty.

and threatened to bite the keepers when they attempted to separate them. When the man left him, he fell sick, rejected all food, was long on the verge of death' and would thenceforth never suffe[illegible] a stranger to approach him. EDITOR.

The Wolf grows gray as he grows old, and his teeth wear, like those of most other animals, by using. He sleeps when his belly is full, or when he is fatigued, rather by day than night, and is always very easily waked. He drinks frequently; and in times of drought, when there is no water to be found in the trunks of old trees, or in the pools about the forest, he comes often, in the day, down to brooks, or lakes in the plain. Although very voracious, he yet supports hunger for a long time, and often lives four or five days without food, provided he is supplied with water.

The Wolf has great strength, particularly in his fore parts, in the muscles of his neck and jaws. He carries off a sheep in his mouth without letting it touch the ground, and runs with it much swifter than the shepherds who pursue him, so that nothing but the dogs can overtake him, or oblige him to quit his prey. He bites cruelly, and always with greater vehemence in proportion as he is less resisted; for he uses precautions with such animals as attempt to stand upon the defensive. He is cowardly, and never fights but when under a necessity of satisfying his hunger, or of making good his retreat. When he is wounded by a bullet, he is heard to cry out; and yet, when surrounded by the peasants, and attacked with clubs, he never howls, but defends himself in silence, and dies as hard as he lived.

If he happens to be caught in a pit-fall, he is for some time so frightened and astonished, that he may be killed without offering to resist, or taken alive without much danger. At that instant, one may clap a collar round his neck, muzzle him, and drag him along, without his even giving the least signs of anger or resentment. At all other times, he has his senses in great perfection. He smells a carcass at the distance of more than a league; he also perceives living animals a great way off, and follows them a long time upon the scent. Whenever he leaves the wood, he always takes care to go out against the wind. When just come to its extremity, he stops to examine, by its smell, on all sides, the emanations that may come either from his enemy or his prey, which he very nicely distinguishes. He prefers those animals which he himself kills to those he finds dead; and yet he does not disdain these, though ever so much infected, when no better is to be had. He is particularly fond of human flesh; and, perhaps, if he was sufficiently powerful, he would eat no other, Wolves have been seen following armies, and arriving in numbers upon the field of battle, where they devoured such dead bodies as were left upon the field, or but negligently interred. These, when once accustomed to human flesh, ever after seek particularly to attack mankind, choose to fall upon the shepherd rather than his flock, and devour women, carry off their children, &c. These dreadful Wolves are called *ware-wolves*, that is to say, Wolves of which we ought to be *aware.*[*]

The Wolf was early extirpated in England. Nothing is heard of them subsequently to the reign of Edward I. They stood their ground, however, much longer in Scotland and Ireland. The last Scotch Wolf is said to have fallen in Lochaber, late in the seventeenth century, by the hand of Sir Ewen Cameron. In Ireland they were not extirpated till the beginning of the eighteenth century.

The colour of this animal differs according to the different climates in which he is bred, and often changes even in the same country. Besides the common Wolves which are found in France and Germany, there are others with thicker hair, inclining to yellow. In the northern climates, some are found quite black, and some white all over. The former are larger and stronger than those of any other kind.

THE CLOUDED BLACK WOLF.

THIS animal, two fine specimens of which are now in the Tower, is a native of the extreme northern regions of America. It is a much nobler looking creature than the common species, and is also much larger and more robust. The ears are remarkably short, and the tail is shorter in proportion than that of the Wolf. The hair is mottled with various shades of black, gray, and white, and is of considerable length, particularly along the middle of the back and shoulders, where it forms a sort of ill-defined mane. On the sides the colouring is somewhat lighter, and is of a still lighter shade beneath. From the top of the nose to the origin of the tail, this animal measures about four feet and a quarter. Its ferocity remains undiminished by protracted confinement.

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[*] This is a mistake. The word and the definition are both wrong; and the latter has the additional demerit of being absurd. There is no species of Wolf of which it is unnecessary to be aware. The word is derived from the Saxon. It is *were-wolf*, i. e. man-wolf, from a very ancient superstition that sorcerers sometimes changed themselves into Wolves. The Greeks also had their lycanthropos, or man-wolf.—**Editor**

THE FOX.

This animal has always been famous for his artifices; and the reputation he has thus acquired, he partly merits. What the wolf cannot accomplish but by his superior strength, the Fox accomplishes by his superior cunning. Without attempting to oppose either the shepherd, his dog, or his flock, he finds an easier way to subsist. Patient and prudent, he waits the opportunity for depredation, and varies his conduct as he perceives that circumstances vary; and though as indefatigable as the wolf, and more nimble than that animal, he yet does not trust entirely to the swiftness of his course, but contrives for himself an asylum, to which he retires in cases of necessity, and in which, sheltered from danger, he brings up his young.

The Fox generally fixes his residence at the edge of a wood, and yet not far removed from some cottage or some hamlet. He listens to the crowing of the cock, and the cackling of other domestic fowls; even at a considerable distance he scents them, and seizes his opportunity. If he be able to get into the yard, he begins by levelling all the poultry without remorse. This done, he carries off a part of the spoil, hides it at some convenient distance, and again returns to the charge. Taking off another fowl in the same manner, he hides that also, though not in the same place; and this method he practises for several times together, till warned by the approach of day or the noise of the family, he finally retires. The same arts are observed when he finds birds entangled in springes laid for them by the fowler; with whom the Fox, taking care to be beforehand, very expertly snatches the birds out of the snare, conceals them in different places, leaves them there sometimes for two or three days, and is never at a loss to recover his hidden treasure. He is equally alert in seizing the young hares and rabbits, before they have strength enough to escape him; and when the old ones are wounded and fatigued, he is sure to come upon them in the moments of distress, and to show them no mercy. In the same manner he finds out the nests of the partridge and the quail, and seizes the mother while sitting.

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The Fox is so voracious, that, when deficient of better food, he devours rats, mice, lizards, toads, and serpents. Insects and shell-fish he is likewise sometimes known to eat. In vain does the hedgehog roll itself up into a ball to oppose him: this determined glutton teases it till it is obliged to appear uncovered, and then devours it. The wasp and the wild bee are attacked by him with equal success. Though at first they fly out upon their invader, and actually oblige him to retire, yet this repulse is but for a few minutes, till he has rolled himself upon the ground, and thus crushed such as may have stuck to his skin: he then returns to the charge, and at length, by dint of perseverance, obliges them to abandon their combs, which he greedily devours, both wax and honey.

The young Foxes are born blind, like dogs; like them, too, they are eighteen months or two years in coming to perfection, and live about thirteen or fourteen years. They are nursed with great affection by the mother, who has been known to run with them in her mouth several miles when hunted. The senses of the Fox are as good as those of the wolf; his scent is more acute, and the organ of his voice is more supple and more perfect. The wolf is never heard but by dreadful howls, while the Fox only yelps, barks, and sends forth a mournful sound, resembling the cry of the peacock. His tones, too, are different, according to the different sentiments with which he is affected. He has one sound expressive of desire, another of murmur, another of sorrow, and another of pain: the latter is never heard from him, unless in the instant that he is wounded by a shot, and has lost the use of some member; for, like the wolf when attacked with cudgels alone, he never murmurs, but will defend himself with obstinacy, and fight in silence to the last gasp. He bites dangerously, and with such determined fury, that, in order to make him relinquish his hold, ponderous wooden and even iron bars are necessary to be forced between his jaws.

The flesh of the Fox is not so bad as the flesh of the wolf. Dogs, and even men, eat it in autumn, especially if the animal has fed on grapes; and, in winter, good furs are made of his skin. He sleeps so sound, that, however closely approached, there is no great danger of awaking him. When he only means to rest himself, he stretches out his hind legs, and remains flat upon his belly. In this posture he watches for the birds as they perch on the hedges; who no sooner perceive him than they give each other warning of their approaching danger. The jackdaw and the magpie, in particular, often follow him along to the distance of some hundred paces, still towering beyond his reach, and with their cries, and notes of hostility, apprize other animals to beware.

Of all wild animals, the Fox is most subjected to the influence of climate; and there are found nearly as many varieties in this species, as in that of any domestic animal. The generality of Foxes in this climate are red; of some, however, the hair is of a grayish cast; and, of all, the tip of the tail is white. In the northern countries we find Foxes of all colours.

THE ARCTIC FOX.

This animal is like the Fox in the form of its body and the length of its tail, but it is more like the canine species in the make of its head and the position of its eyes. It thus forms a sort of intermediate link between the two kinds. Its hair is softer than that of the common Fox, and thick, tufted, and glossy: but its most striking peculiarity consists in its changing colour; being seen at one season of the year brown, and at another perfectly white. It is found only in the Arctic regions, and the islands of the Frozen and Eastern Ocean. Of all animals it is that, perhaps, which is possessed of the largest share of cunning. It burrows like the Fox, and is remarked for keeping its kennel very clean; it litters generally about May or June.

THE BADGER

Is a lazy, distrustful, solitary animal, that retires far from the approach of man, and digs a subterraneous residence, where it spends, at least, three-fourths of its existence, and never ventures forth but in search of food. It burrows in the ground with particular facility, as its body is rather of an oblong form, and its claws, those especially of the fore feet, are very long and compact. The hole which it thus forms often proceeds to a great depth below the surface of the earth, and the passage to it is always oblique and winding.

The fox, who is less expert at such excavations, often appropriates to his own convenience the labours of the Badger.

Unable to compel him from his retreat by force, it often drives him from it by stratagem, often remains a fixed sentinel at the mouth of the passage, disturbs it, and, as an infallible expedient, it is said, emits his ordure. The Badger gone, he immediately assumes possession of it, enlarges it, and every way accommodates it to his own purpose. Though forced to remove to another habitation, this animal does not, however, remove to another country. At a little distance from its old burrow, it forms a new one, from which it never stirs but at night. The dogs easily overtake it when it is at any distance from its hole, and then, using all its strength, all its powers of resistance, it throws itself upon its back, and defends itself with desperate resolution. It has one single advantage over its assailants. The skin is so thick, and especially so loose, that the teeth of the dogs can make little impression on it, and the Badger can turn himself round in it, so as to bite them in their tenderest parts.

The young Badgers are easily tamed; they will play with young dogs, and, like them, will follow any person whom they know, and from whom they receive their food; but the old ones, in spite of every effort, still remain wild. They are neither mischievous nor voracious, as the fox and the wolf are, yet they are carnivorous; and though raw meat is their favourite food, yet they will eat any thing that comes in their way, as flesh, eggs, cheese, butter, bread, fish, fruit, nuts, roots, &c. They sleep the greatest part of their time, without, however, being subject, like the mountain rat or the dormouse, to a torpor during the winter: and thus it is that, though they feed moderately, they yet are always fat.

Their hole they keep exceedingly clean, nor are they ever known to void their ordure in it. The male is rarely to be found with the female. In summer she brings forth and her usual number at a birth is three or four. These she feeds at first with her milk, and afterward with such petty prey as she can surprise. She seizes young rabbits in the warren, robs birds of their young, while yet in the nest, finds out where the wild bees have laid up their honey, where field-mice, lizards, serpents, and grasshoppers are to be met with, and carries all to her expecting brood.

which she frequently brings forward to the mouth of her hole.

These animals are naturally of a chilly temperament. Such as are reared in a house seem to be never more happy than when near a fire. They are likewise very subject to the mange; and, unless carefully washed, the dogs that penetrate into their burrows are seized with the same distemper.

The hair of the Badger is always filthy; between the anus and the tail there is an opening, which, though it has no communication with any interior part, and is hardly an inch deep, continually emits an oily liquid. This the animal is fond of sucking. Its flesh, when the animal is well fed, makes excellent hams and bacon; and of its skin are made coarse furs, collars for dogs, and trappings for horses. The hair is used for painters' brushes.

In America, hunting this animal forms a source of amusement and emolument to the Indians of Bocca Montana, Albarregas, and most tribes that inhabit the higher regions of the Cordilleras, from Coro to Cumana. As there are no stated periods for taking it, although in the months of August, September, and October, it is certainly fattest, they continue to search for it the whole year round, unless during the breeding season, when the flesh is lank and lean, and the lard, or butter (*manteca*) rancid. In making their hunting dispositions, they form parties of seven or eight, or more. When the tribe is numerous, they will sometimes take five, six, or seven miles in a sweep over the country; and such is their dexterity and address in taking these animals, that they will nearly clear it for five or six years of Badgers, notwithstanding all the obstruction of brushwood, cover, &c. &c. In these excursions they are accompanied by a number of women and boys, whose business it is to build temporary huts, cook, collect fruits, and, lastly, to cure what Badger hams and gammons the men catch; this is no sinecure, and although they rest during the night, the day ushers them in more labour than comes to the hunters' share. When they arrive at the Badgers' haunts,—generally in high situations, contiguous to rocks, for the purpose of burrowing when hard pressed,—they soon discover his traces by the manner in which he scrapes for pistachios and other nuts. They then search the rock until they find the burrow, and also under the projecting roots of large trees, the hollows of which afford them shelter. When the burrows are in trees, they seldom give themselves the trouble of erecting pitfalls for them, as their curs kill and drag them out, or else they dig them out. When the burrows are in the rocks, they set to work to erect pitfalls or traps, in the building of which they display a regularity and system that would do credit to a European mason. As the falls are four feet by four in height and breadth, the flags with which they are built are so closely set, as to prevent the creature introducing his paw-nails between them; for his strength is such that he would raise a stone of two or three hundred weight. As the Badger's family generally consists of seven or eight, the hunters set as many of those pitfalls in their way as will intercept them, one by one, in making their passage to their burrows; and frequently one in the mouth of the burrow, provided it is large enough, covering them with turf, earth, and leaves, over little twigs. As soon as they have made a sufficient number, with incredible labour and perseverance, using no other implements than their hatchets and stone-hammers, the covering-flag is placed over; at the back of this they place a quantity of rubbish, so as to give weight to its fall, and plant bushes so artfully as to deceive a stranger, forming a lane, through which the creature must necessarily pass to his burrow. Then one or two ascend the trees or highest rock, to give notice of the Badger's approach; while another is buried in sight of the traps in such a manner as to be covered with leaves, and in such a posture as to observe the creatures coming toward the traps, and hurry them into them by missiles, but never attempts to show himself until the Badger passes him. In this mannér the remainder of the party advance into the brushwood, and then let loose their dogs, who, on scenting the Badgers, set up a whining cry, accompanied by the rattles of the Indians, making the Badger start, and betake himself to his burrow. Sometimes seven or eight will start together, the most of which are always caught; but should one escape, they again hunt the ground over. If their party is not numerous enough, the women join after the first chase, as the danger of coming in contact with tigers is over, the first noise having started these as well as most noxious creatures. Indeed, the Badger is seldom found near the jungle, as he is not fond of such neighbours. Should one escape the traps, which is very seldom the case, they leave the traps set day and night, and a man to watch him, until hunger forces him to quit his subterraneous abode. Sometimes the Indian curs will enter, and kill the creature, if his burrow is large enough to admit them; yet he often makes them retreat, provided they cannot surround him, although those curs are certainly superior to our European terriers in bite, and tenacity of their hold. Whenever a Badger earths, the Indians cast lots, to know which shall watch until the Badger breaks, leaving him two days' provisions in the mean time, supposing this to be the usual time until the animal bolts. But it is sometimes a toss up which will hold out longest, especially if it be an old Badger; but even here the Indian has decidedly the advantage, as he is known to endure four days' hunger, without any bad results. If it happens in harvest, he is pretty well off; for his cunning makes him an overmatch for the animal, and he always carries the image of a man, of rude workmanship, which he sets before the earth, supported by twigs in a moving position; this prevents the Badger stirring while the Indian goes in quest of food, a work of little time with him, as he is satisfied with the first thing he finds: he soon returns to await the coming out of his subterraneous visiter, as the disgrace of returning without the Badger is shocking to a hunter, and debars his ever being a *guapo*, or warrior, until he can, by some very extraordinary feat, wipe this stain off his name. They also use the noose or snare to catch these creatures, which is placed across the pathways, like rabbit-wires, with this exception, that the Indian snare is attached to a spring pole, that suspends and strangles the creature. The South American Badger is larger than those in Europe, and much browner; he is also much easier killed.

Perhaps its habits are the most social of any quadruped in the universe; it is not known to quarrel with any other quadruped; even the fox, polecat, stinkard, the opossum, the land crab and snake, make it resign its abode, although it is much stronger than any of them. It also lives in the greatest harmony with its own species, subsisting principally on nuts, roots, and vegetables; and is cleanly in its habits, being observed to perform its ablution while the dew is on the ground. The Indians count two species of it, *viz.* the Marano, or pig-badger; and the Pero, or dog-badger. I am informed the former roots for its amusement like a pig; they bring forth two, three, and four at a litter, and preserve them carefully. Badger hams are certainly delicious, and the sale of them was prohibited but to the viceroy, who generally shipped a quantity of them annually to Madrid for the use of their august majesties; now they are purchased for one fourth the original value, as the viceroy sometimes paid eight or ten dollars for a pair of gammons. The way of curing them, perhaps, contributed to their flavour, which was simply to rub them with coarse sugar and Chili pepper, each day pressing them very hard until quite dry. This source of emolument would have been considerable to these hunting tribes were they not cheated and made tributary to the viceroy, as they had to give him a dozen first, and afterward take trinkets out of the stores, at whatever price he chose to demand. The butter, or manteca de marano, as they call the lard, was also in great demand among the grandees, who fried most of their food in it.

A party of eight would destroy two or three hundred Badgers and a quantity of deer, on their return home, besides guanas. These hunting parties are so delightful, even to the women, that the hopes of being allowed to accompany the men will be a stimulus to conduct themselves properly the year round. On those excursions they live well, and seem more happy than during the rainy season: in their way home they travel day and night rapidly, in spite of all obstructions, carrying long poles between them, on which the animals are slung; the skins and lard the boys carry. The women are certainly the heaviest loaded, and must keep pace with those gentry; the dogs too are better fed during this period, and seem to return with regret. A cloud of vultures generally hover over them, and are seen by their clans a day or two before they arrive, who make every preparation to receive them: their return is greeted like that of victors. The rainy nights are passed in recounting their exploits one to another.

THE OTTER.

Of the Otter tribe there are eight species known, of which, however, it will be necessary for us to describe only two. Otters have six sharpish cutting teeth in each jaw, the lower of which do not range in a line with the rest, two of them being placed somewhat within the others. The canine teeth are also longer than the others. Webbed feet are common to all the varieties of this tribe, which are likewise characterized by very long bodies and short legs.

The Common Otter is of a deep brown colour, and is usually about two feet in length from the tip of the nose to the insertion of the tail; the head and nose are broad and flat; the mouth bears some similitude to that of a fish; the neck is short, and equal in thickness to the head; the body long: the tail broad at the insertion, but tapering off to a point, and about sixteen inches long; the eyes are very small, and placed nearer to the nose than is customary in quadrupeds. The legs are very short, but remarkably strong, broad, and muscular, and so placed as to be capable of being brought into a line with the body, and performing the office of fins; and each foot is furnished with five toes, connected by strong broad webs, like those of waterfowl.

Accurately considered, the Otter cannot be pronounced an amphibious animal. We even find them drowned when they happen to have been entangled in a net; and this evidently for want of having had time to destroy it, and thereby effect their escape. For want of fish, frogs, water-rats, or other nourishment, it will eat the young branches, and the bark of aquatic trees; and in spring it will eat new grass.

These voracious animals are generally found at the sides of lakes and rivers, but particularly the former, in which they destroy so much more than they devour, that they will sometimes spoil a pond in the space of a few nights. They do equal mischief by tearing in pieces the fishermen's nets, which they infallibly do, whenever they happen to get entangled in them. In forming its retreat the Otter displays great sagacity. It makes the entrance under water, burrows upward, provides several cells to retire to in case of floods, and opens on the surface a small orifice for the admission of air, which orifice it contrives so as to be concealed by a thick bush. The female goes with young about nine weeks, and generally produces four or five at a time. These are always found at the edge of the water; and, if under the protection of the dam, she teaches them, on the approach of an enemy to plunge, like herself, into the deep, and escape among the weeds or rushes that fringe the stream. It is, therefore, only in the absence of the dam, that the young can be taken; and in some places there are dogs purposely trained for discovering their retreats. One of the favourite pastimes of the Otter is, to get on a high ridge of snow, bend their fore feet backward, and slide down the side of it, sometimes to the distance of more than twenty yards.

If taken while young, the Otter may be tamed and taught to fish for its master, and will become almost as affectionate and docile as the dog.

For the destruction which he makes among the finny tribe, and also the disturbance which he gives them in their haunts, the Otter is an object of abhorrence to the angler. Old Izaak Walton calls them "villaneous vermin," and many other hard names, and declares that, in his judgment, "all men that keep Otter-dogs ought to have pensions from the king, to encourage them to destroy the breed of these base Otters."

Unless it can be shot, it is difficult to capture the Otter, when the water is not frozen, as it takes to the water, dives, and only occasionally "vents," as the hunter terms it, that is. raises its nose to the surface to breathe. The old hunters (says a recent writer) who set more value upon the difficulty of the capture, than on the prey itself, attack the Otter *in posse comitatus*, beat the banks with dogs, hedge in a space with nets, and assail the Otter with clubs and spears, when he comes up to breathe." This was precisely the manner in which an Otter hunt was conducted in the days of honest Izaak, and he seems to have considered it as the finest of all sports—except angling.

In South America, hunting the Otter forms a recreation for the grandees or better sort of gentry for two or three months in the year, like our grousing or partridge shooting parties. The sport is thus described by a recent traveller: In the month of May the parties assemble by previous arrangement, composed principally of the chief inhabitants of these districts and their relatives or clans, and visiters, male slaves, muleteers, &c. Having ascended the waterfalls, they encamp near those clear and transparent rivers in which Otters abound in great numbers. After the business of physicking the bloodhounds and a species of blueish cur without any hair, they make their hunting dispositions, and appoint their land and water captains to head each party; the duty of the latter is to stand in the prow of the canoe and cheer the dogs to the prey. A huntsman, in fact, is mostly an Indian, as those dogs will not hunt to any other tongue; what this is owing to, whether custom or sagacity, I know not, but it is certainly the case; however, the young Spaniards and Creoles have latterly remedied this defect, and are now as well qualified to hunt a bloodhound in the Indian tongue as an Indian himself. Both parties have armed themselves with Otter spears, barbed like harpoons, and with long handles made of rough light wood about ten feet or more, they cheer on the bloodhounds, who no sooner wind the prey than they join chorus with their huntsman, until they arrive near the Calle Pero, or Otter city, when the land party divide into three; one watches; another ascends the ford; while the others poke the banks, in order to eject the creature. As soon as he is started, the hounds are again in full cry, and the curs are loosed to dive after him, and will relieve each other in this task: as soon as one is up down goes the other, while the hounds keep up the cry in the water at a slow pace, until they eventually force the creature to the head of the stream into shallow water, where these curs either snap him up, or he is speared by the hunters; after this the hounds are allowed the gratification of mouthing him until satisfied, when they again return to depopulate this little commonwealth of Otters.

After all the old Otters have fled, the young ones betake themselves to the uppermost recesses of their burrows, and defend themselves with great obstinacy when they are dug out of their habitation; a slight blow on their forehead will soon despatch them, as that seems their most vulnerable part. In their abode the heads, tails, fins, and fragments of several species of fish are to be seen; for the Otter is, like most aquatic monsters, a glutton. As he seldom eats more than a mouthful of each fish, he must cause frightful destruction among the finny race, and his depredation causes his haunts to be found out at low water, when the hounds would otherwise pass him.

Abbé Ricardò, who wrote a little treatise on the history of this animal, about a century ago, (which is still in good preservation in the cathedral of Caraccas,) relates, that while the parent Otters are in existence, they do not suffer the young gentry to attempt propagating the species, but that the young are two or three years under their parents' guardianship. One thing is very certain,—in the same community are to be met three or four differe nerations of those creatures under the guidance of patriarch. The alligator is the only aquatic enem this creature, with the exception of the shark, with w he has very little intercourse. It seems Father Rica caused a cage pond to be erected in his garden, in or to study their natural history. His little work teems with amusing anecdotes of the aboriginal hunters, of whose club he was a member; those gentry, he said, during such excursions, lived well. Certainly, the echoing cry of hounds and hunters is the most delightful I ever heard. It vibrates through every glen, at the distance of five or six miles.

The colour of the South American Otter is different from that of the European: the latter is much darker, and the male is still darker than the female, who generally gets brown while suckling her Puppies; Abbé Ricardo says that they change coats. The skin is now more valuable than formerly, as General Parr's cavalry use them for pistol covers, and foraging regimental caps are made of them. They also use their skins for segar cases, and the Indians eat their flesh. In destroying fish, the Otter rejects the head, and will not use it, although pressed by hunger. In Buenos Ayres there is one quite domesticated, which will invariably bring home what it gets in the river: but tame habits make it lazy and indolent; it is vicious during the breeding season, and is obliged to be chained.

THE SEA OTTER.

THIS harmless, playful, and interesting animal is generally about four feet long, thirteen inches of which are occupied by the tail. The fur is of great value, it being soft and of a deep glossy black. It has long been exported in great quantities by the Russians, who receive eighty or a hundred rubles from the Chinese for each skin. The Sea Otter is to be found only within a very few degrees of latitude in the North Pacific; its range being mostly confined to the coast of Kamtschatka, the adjoining islands, and the opposite American shore. Sea Otters are perfectly inoffensive, and so sportive that much of their time seems to be passed in playing diverting tricks. They live in pairs, and are very constant to each other. Such is their fondness for their young, that they will never abandon them; on being robbed of them, they will starve themselves to death, and will endeavour to breathe their last on the spot where their offspring were destroyed.

THE MARTIN.

The generality of naturalists have considered the Martin and the pine Martin as animals of one and the same species. They are, however, different both in disposition and temperament. The pine Martin shuns open countries, confines itself to the bosom of the forest, fixes its residence upon some tree, and is never found in great numbers but in cold climates; while the Martin not only approaches human habitations, but even forms a residence for itself in old buildings, in haylofts, in holes of walls, and the species is generally diffused in great numbers over all the temperate climates.

The countenance of the Martin is very sharp; its head is small, and elegantly formed; its eye is lively; its limbs are supple; its body is astonishingly flexible; and all its movements are quick. The back, sides, and tail of the Martin are covered with a fine downy fur, with longer hair intermixed; the roots of an ash colour, the middle of a bright chestnut, and the points black. The head is brown, with a slight cast of red; the legs and feet are of a chocolate colour, and the throat and breast are white. It rather leaps and bounds than walks; and with great facility climbs walls, enters pigeon-houses and hen-houses, devours the eggs, the pigeons, and the hens, as on other occasions it does mice, rats, moles, and birds in their nests. Of small feeble animals it dislocates the neck, and divides the spinal marrow by a single crush of its jaws; but it seizes large strong animals on the side of the neck, behind the ear, and divides the vessels with anatomical precision.

This animal, it is said, brings forth as often as the cat. The growth of the young ones is very quick; and hence it may be inferred, that it is an animal whose life does not exceed eight or ten years. Its smell, which is agreeable, is like that of counterfeit musk. Both the Martin and the pine Martin, as well as a number of other animals, have interior vesicles which contain a strong scented substance like that which the civet furnishes.

THE PINE MARTIN, OR PINE WEASEL,

Originally a native of the north, is in a manner peculiar to that climate, where they are so numerous, that the quantity of furs produced from this animal alone, and carried into foreign countries, is actually astonishing. In temperate climates, on the contrary, it is rarely, and in warm climates never, to be found. Some there are in Burgundy, and some in the forest of Fontainebleau; but in general they are as scarce in France as the Martin is common. It is not uncommon in the wild parts of Scotland, among the wooded ravines of the mountains.

Alike averse to open countries, and to countries which are inhabited, it remains in the bosom of some forest, ranges below through the labyrinths of the thicket, or towers aloft upon the branches of trees. It subsists by the chase, and destroys a prodigious quantity of birds, whose nests it searches for, and invades, in order to devour the eggs. Of the squirrel, the dormouse, &c. it also makes a prey; and it is known to eat honey as well as the Martin. In the description of the Wild Cat we have given an account of the combats of that animal with the Pine Martin. To this may be added, with respect to the latter, that it is said to be sometimes victorious even over the golden eagle, when that bird pounces on it as its prey. It seizes the aggressor by the throat, and the loss of blood soon brings down the eagle lifeless from its "pride of place."

Its neck is yellow, whereas that of the Martin is white; and its hair, at the same time, is much finer, thicker, and less subject to shed.

When the female is near her time, her custom is to climb to the nest of some squirrel, to drive her from it, to enlarge it for her own purpose, and to bring forth her young in it. In the same manner, she occupies the old nests of the owl and the buzzard, as also the hollow places of trees, from which she presently dislodges the woodpecker, and other birds.

THE POLECAT, OR FITCHET,

Is somewhat smaller than the martin; its tail is shorter; its snout sharper; and its hair thicker. It differs likewise in its voice; the cry of the martin being rather sharp and loud, that of the Polecat deeper and more hollow. It is about seventeen inches in length; of a deep chocolate colour, nearly approaching to black; has short ears, tipped with white, and the tail is covered with longish hair. In summer he generally lives in woods, thick brakes, or rabbit warrens. His burrow is about two yards deep, and commonly ends under the root of a tree. In winter he haunts barns, haylofts, and other out-houses, whence he sallies forth on the poultry.

The Polecat does not at all resemble the martin in smell, which, in the former, far from being in any degree agreeable, is to the last degree fetid. When heated or enraged especially, it sends forth and diffuses a stench that is absolutely intolerable. The dogs will not eat its flesh; and even its skin, though good in itself, sells at a very low price, as it can never be entirely divested of its natural odour.

These animals are very destructive to young game of all kinds, and commit dreadful devastations among pigeons when they get into a dovehouse. Without making so much noise as the weasel, they do a great deal more mischief; dispatching each victim with a single wound in the head, and satiating themselves with copious draughts of blood, after which they carry off the prey: or if the aperture by which they entered will not admit of this, they first eat the brains, and then carry away the head, leaving the body behind. They are also extremely fond of honey, and are frequently known, in winter, to attack the hives, and drive away the bees. Rabbits, however, seem to be their favourite prey, and a single Polecat is often sufficient to destroy a whole warren. They will also catch and eat fish, though, probably, this is done by them only when other food is not attainable.

THE FERRET.

It has been doubted by some authors, whether or not the Ferret and the polecat were animals of two different species Perhaps, the resemblance there sometimes is in the colour of their hair first gave rise to this uncertainty. The polecat, nevertheless, a native of temperate climates, is an animal wild like the martin; whereas the Ferret, originally an inhabitant of Africa, can only exist in our climate as a domestic animal. The Ferret also, and not the polecat, is made choice of to drive the rabbits their burrows, chiefly because it is more easily ta The Ferret has a longer and thinner body, a nar head, and a sharper snout, than the polecat. It has not same sagacity in providing for its subsistence; it can exist, at least in our regions, without the care of man, have such of the species as have been lost in the burro of rabbits, been ever known to multiply in the coun but have, on the contrary, perished, to all appearance, the severity of the winter.

This animal is by nature a mortal enemy to the rab If even a dead one is presented to a young Ferret wh had never seen one before, it springs at it, and tears with fury; if it be a living one, it seizes it by the and nose, and instantly begins to suck its blood. the Ferret is let loose into the burrows of the rabbits, necessary to muzzle him, that he may not kill them the bottom, but only oblige them to run out, and ther fall into the net laid for them at the entry. If he is lowed to go unmuzzled, there is a risk of losing him, cause, after having sucked the blood of the rabbit, he fall asleep; and the smoke which is raised at the mo of the burrow does not always prove a sufficient expedi for bringing him back, as there are often more issues t one, and as one burrow generally communicates others, in which the Ferret is apt to be the more bewildered, the more he is surrounded with the smoke.

THE WEASEL.

THE common Weasel is as frequent in temperate and in hot countries, as it is scarce in cold ones. Though of the same species, it is in many respects different from the ermine, which is a native of the north.

The Weasel is the smallest of the class to which it belongs, and is an active and handsome little animal. Exclusive of the tail it is not seven inches in length; and its height is not more than two and a half. The tail, which is bushy, measures about two inches and a half. The colour of the Weasel is a pale reddish brown on the back and sides, but white under the throat and belly. The eyes are small and black; the ears short and roundish; and the nose is furnished with whiskers, like those of a cat

It moves by unequal leaps, and can spring several feet from the ground, or run up a wall without difficulty.

When a Weasel enters a henroost, it never meddles with the cocks or the old hens; it makes choice of the pullets, the young chickens, and these it kills with a single stroke on the head, and carries away one after another. The eggs it sucks with incredible avidity; making a small hole at one end, through which it licks out the yolk. In winter it generally resides in some granary, or hayloft; where the female often continues even in the spring, in order to bring forth her young among the hay or straw. During this time the Weasel makes war with the rats and mice with more success than the cat, since, following them into all their holes, it is next to an impossibility for them to escape. It also climbs up to the pigeon houses, to the nests of sparrows, &c. and commits great havoc. In summer, it removes to some distance from the houses, always choosing the lower countries about the mills and streams, hiding itself among the bushes, in order to catch the birds, and not unfrequently taking up its habitation in the hollow of an old willow. The female generally brings forth four or five. The young ones come forth with their eyes shut, but in a little time they attain a sufficiency of growth and strength to follow their mother to the chase. They attack adders, water rats, moles, field mice, &c. and, traversing the meadows, devour quails and their eggs.

Like the polecat and the ferret, these animals have so strong a scent that they cannot be kept in any place that is inhabited. As their own smell is very bad, they seem to sustain no inconvenience from any foreign stench or infection. A peasant in my neighbourhood took, one day, three Weasels newly brought forth in the carcass of a wolf which had been suspended by its hind legs from one of the branches of a tree; and though the wolf was almost entirely rotten, the old Weasel, nevertheless, brought grass, straw, and leaves, in order to make a bed for her young ones in the cavity of the thorax. The Weasel may be tamed, and is then very good tempered, and excessively curious.

THE ERMINE, OR STOAT.

The weasel with a black tail is called the Ermine when it is white, and the Stoat when it is red or yellowish.

Though it is a less common animal than the weasel, yet there are numbers to be found in the old forests, and sometimes during the winter in the neighbourhood of woody grounds. It is always easy to distinguish it from the common weasel, because the tip of its tail is uniformly of a deep black, while the edges of its ears, and the extremities of its feet, are white.

CHAPTER XII.

Of certain smaller Animals of the carnivorous Class—The Squirrel—The Rat—The Brown Rat—The Water Rat—The Mouse—The Long-tailed Field Mouse—The Short-tailed Field Mouse—The Shrew Mouse—The Water Shrew Mouse—The Bat—The Fat Squirrel—The Garden Squirrel, or Great Dormouse—The common Dormouse—The Guinea Pig—The Mole—The Hedgehog—The Marmot.

THE SQUIRREL.

The common Squirrel is a beautiful little animal, which is only half wild, and which, by its gentleness, its docility, and even the innocence of its manners, might deserve to be exempted from the present class. It is neither properly a carnivorous nor an injurious animal, though it sometimes seizes on birds; its general food consisting of fruit, almonds, hazle-nuts, beech-mast, and acorns: it is neat, cleanly, alert, lively, and industrious; its eyes are large, black, and full of fire, its countenance is sharp, its body is nervous, and its limbs are supple. It is of a bright brown colour, inclining to red; the breast and belly are white; the ears are ornamented with long tufts of hair. The fore feet are strong and sharp, and the fore legs are curiously furnished with long stiff hairs, projecting on each side like whiskers.

The beauty of its form is yet heightened by a spreading tail, in shape like a plume of feathers, which it raises above its head, and forms into a kind of shade for itself.

The Squirrel may be said to be less a quadruped than almost any other four-footed animal. It generally holds itself almost upright, using its fore feet as hands for a conveyance to its mouth. Instead of hiding itself in the earth, it is continually in the air: it somewhat resembles the birds by its lightness and activity; like them, it rests upon the branches of trees; leaping from one to the other, and in the highest of them builds its nest. It avoids the water still more than the earth; and it is even asserted of this animal, that, when it is obliged to cross a river or stream, it uses the bark of a tree, or some such light woody substance, as a boat, while its tail supplies the place of sails, and of a rudder. It gathers together a quantity of nuts during the summer, which it deposits in the hollow part of some old tree, and to these has recourse for provision in winter; and such is the agility of its body, that it will, in an instant, climb a beech tree, let its bark be ever so smooth.

There are many species which approach to that of the Squirrel, though there are few varieties in the species itself. Some there are of an ash colour, and all the others are red. The small gray Squirrel is of a different species and remains always gray: and, without mentioning the flying Squirrels, which are very different from the others, the white Squirrel of Cambaye, which is very small, and has a tail like that of the European Squirrel; that of Madagascar, called *Tsitsihi*, which is gray, and which, as Flacourt says, is neither handsome nor fit to be tamed; the white Squirrel of Siam; the gray, and spotted Squirrel of Bengal; the streaked Squirrel of Canada; the black Squirrel; the large gray Virginian Squirrel; the white-striped Squirrel of New Spain; the white Siberian Squirrel; the variegated Squirrel; the little American Squirrel; that of Brazil; that of Barbary; the *palmist*, &c. form so many species entirely distinct and separate from that of which we have been treating.*

THE LONG-TAILED SQUIRREL

Is about three times the size of the common Squirrel. It is of a blackish colour, and is a native of Ceylon and Malabar.

THE RAT.

If we descend by degrees from the great to the small, from the strong to the weak, we shall find, that Nature has uniformly maintained a balance; that, attentive to the preservation of each species, she creates a profus of individuals, and is supported by the numbers which has formed of a diminutive size, and to which she denied weapons, strength, and courage.

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* See Chap. XV

Under the general name of Rat, several species of sm animals have been comprised. The first of these, kn in England by the name of the *Black Rat*, where indigenous, is carnivorous, and even, if the expressio allowable, *omnivorous*. Hard substances, however prefers to soft ones: it devours wool, stuffs, and furni of all sorts; eats through wood, makes hiding place walls, thence issues in search of prey, and freque returns with as much as it is able to drag along wit forming especially when it has young ones to provid a magazine of the whole. The females bring forth se times in the year, though mostly in the summer seas and they usually produce five or six at a birth.

In defiance of the cats, and notwithstanding the poi the traps, and every other method that is used to des these creatures, they multiply so fast as frequently to considerable damage. On board a man of war they been know to consume a hundred weight of biscuits d and when, to destroy them, the ship has been sm between deck, six hampers a day have for some time been filled with their carcasses. The Isle of France was once abandoned on account of their immense swarms, and, even now, they are a severe scourge to it. In old houses, in the country especially, where great quantities of corn are kept, and where the neighbouring barns and haystacks favour their retreat, as well as their multiplication, they are often so numerous, that the inhabitants would be obliged to remove with their furniture, were they not to devour each other. This we have often, by experience, found to be the case when they have been in any degree straitened for provisions; and the method they take to lessen their numbers, is, for the stronger to fall upon the weaker. This done, they lay open their skulls, and first eat up the brains, afterward the rest of their body. The next day, hostilities are renewed in the same manner; nor do they suspend their havoc till the majority are destroyed. For this reason it is, that, after any place has for a long while been infested with Rats they often seem to disappear of a sudden, and sometimes for a considerable time.

The female always prepares a bed for her young, and provides them immediately with food. On their first quitting the hole, she watches over, defends, and will even fight the cats, in order to save them. The weasel, though a smaller animal, is, however, a still more formidable enemy than the cat. The Rat cannot inflict any wounds but by snatches, and with its fore teeth, which, however, being rather calculated for gnawing than for biting, have but little strength; whereas the weasel bites fiercely with the force of its whole jaw at once, and, instead of letting go its hold, sucks the blood through the wound. In every conflict with an enemy so dangerous, it is no wonder, therefore, that the Rat should fall a victim. The black Rat, has nearly been exterminated in England by the brown Rat, which was introduced from Norway.

There are many varieties in the Rat species. The white Rat, like the white mouse, the white rabbit, and all other animals which are entirely of that colour, has red eyes. The white species, with all its varieties, appears to belong to the temperate climates of our continent, and have been diffused in much greater abundance over hot countries than cold ones. Originally they had no Rats in America; and those which are to be found there in such numbers at this day, are the produce of Rats which accidentally obtained a footing on the other side of the Atlantic with the first European settlers. Of these the increase was so great, that the Rat was long considered as the pest of the colonies; where, indeed, it had hardly an enemy to oppose it but the large adder, which swallows it up alive. The European ships have likewise carried these animals to the East Indies, into all the islands of the Indian Archipelago, as well as into Africa, where they are found in great numbers. In the North, on the contrary, they have hardly multiplied beyond Sweden; and those which are called Norwegian and Lapland Rats are animals different from ours.

THE BROWN RAT

Is both stronger and more mischievous than the black Rat; it has a reddish skin, a long tail without hair, the back bone arched like that of the squirrel, the body much thicker, and whiskers like those of a cat. It is about nine inches long, and has a tail of the same length as the body, covered with minute dusky scales, thickly interspersed with inches long, and has a tail of the same length as the body, covered with minute dusky scales, thickly interspersed with short hairs. It is considerably within half a century since that species has been spread in the neighbourhood of Paris.[*] They multiply indeed prodigiously, since it is well known that they generally produce twelve or fifteen, often sixteen, seventeen, eighteen, and even nineteen young ones at a time. The males are larger, stronger, and more mischievous than the females. When any one pursues, and endeavours to take them, they will turn again, and bite the hand or stick which touches them. Their bite is not only sharp but dangerous, and is immediately followed by a considerable swelling; and the wound, though small, is yet long in being closed. They bring forth three times in a year, the dams previously preparing a bed for their young; and thus two individuals of this species produce at least three dozen in the space of twelve months.

The Brown Rat in its nature, and some of its habitudes, bears a resemblance to the water Rat. Though there is no place in which they will not fix their residence, they yet seem to delight in living near the water. When they find themselves pursued, and have the same opportunity of sheltering themselves in the water, or in a thorny thicket, they prefer the former, plunge into it without dread, and swim with amazing facility. This particularly happens when they cannot get back to their burrows; for they always dig holes for themselves in the earth, or else occupy those of the rabbit. They may also be taken, like that animal, by means of the ferret, which follows them underground in the same manner as it does the rabbit, and seemingly with even more ardour.

These animals live principally upon fruit and corn, but are, notwithstanding, exceedingly carnivorous. They devour young rabbits, partridges, and other birds; and when they enter a hen roost, they destroy, like the pole-cat, more than they can eat. They do not become torpid in the winter, like the dormouse, but take advantage of every fine day to come out of their subterranean mansion. Those which live in barns drive away the mice; and it has even been remarked, that the black Rats, as they are called, have been far less common since the Brown Rats became so numerous.

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[*] It has not been known in England above sixty years though now almost if not quite, the only species of Rat. Editor.

THE WATER RAT

Is a little animal, about the size of the black Rat, but in its nature and habits rather resembling the otter than the Rat. Like the otter, it frequents the fresh waters, and is generally found on the borders of rivers, rivulets, and ponds; like that creature, too, it seldom feeds but upon fish, or the spawn of fish, though sometimes it eats frogs water-insects, and even roots and herbs. This animal is not web-footed; but though every toe of its feet is separated it swims with facility, keeps itself a long time above water and thence carries off its prey, in order to eat it when got to land, either on the grass or in its hole.

The head of the Water Rat is shorter, the nose broader, the hair more exact, and the tail much longer than that of the land Rat. On the back it is of a fine raven black; the under part is white, with a black line along the middle. The body is about three inches long. The fur has an astonishing power of resisting water. Like the otter, it flies from large rivers, or rather from those which are too much frequented, and is never found either in houses or in barns.

It is probable, that these animals bring forth often in a year; but of this we have no certain information. Their flesh is not absolutely bad; and, in Catholic countries, the peasants eat it during the Lent, as they do that of the otter. The species is to be found throughout Europe, the very extremities of the north excepted. In Holland it is devoted to destruction, as one of the most dangerous enemies of the country, in consequence of its burrowing in the dykes.

THE MOUSE

Is an animal smaller than the rat, as also more numerous, and more generally diffused. Its instinct, its temperament, its disposition is the same; nor does it materially differ from the rat, but by its weakness, and the habits which it contracts from that circumstance. By nature timid, by necessity familiar, its fears and its wants are the sole springs of its actions. It never leaves its hiding place but to seek for food; nor does it, like the rat, go from one house to another, unless forced to it, or commit by any means so much mischief. When viewed without the absurd disgust and apprehension which usually accompanies, or is affected at the sight of it, the Mouse is a beautiful creature; its skin is sleek and soft, its eyes bright and lively, all its limbs are formed with exquisite delicacy, and its motions are smart and active. Though one of the most timid of creatures, the Mouse may be taught to repose confidence in mankind, and will quit its place of refuge to receive food. Some few of this species are of a pure white colour, with large red eyes; but whether they be a permanent kind, or only an accidental variety, cannot well be determined.

But for its immense fecundity, the species of the Mouse could not subsist. Even in mousetraps they have been known to bring forth. They produce at all seasons, and several times in the year. Their usual number at a birth is five or six; and these, in less than fifteen days, attain growth and strength sufficient to run about and shift for themselves. As in these respects they soon attain perfection, so the duration of their life must be very short; a circumstance which cannot but heighten our idea of their prodigious multiplication. Aristotle tells us, that, having put a pregnant Mouse into a vessel of corn, he soon after found in it no less than one hundred and twenty Mice, all sprung from one original.

THE LONG-TAILED FIELD MOUSE

Is smaller than the rat, but larger than the common Mouse, and does not live in houses. It is remarkable for the largeness and prominence of its eyes; it differs likewise both from the rat and the Mouse in the colour of its skin, which, while it is tolerably white under the belly, is of a reddish brown upon the back. The species is generally and abundantly diffused.

It appears that they are a long time in attaining their full growth, as they vary considerably in size. The largest are rather more than four inches in length, from the tip of the nose to the insertion of the tail; and the smallest, which appear to be full grown as well as the others, are an inch shorter. As there are found many of different intermediate sizes, however, there is no room to doubt but that the larger and the smaller are all of the same species.

These creatures are fond of dry and elevated grounds In woods, and in the fields adjoining to them, they are to be found in great numbers. They conceal themselves in holes which they either find already made, or which they make for themselves, under bushes, or the trunks of hollow trees. In these they amass so prodigious a quantity of acorns, nuts, &c., that in one single hole there has been found a bushel at a time; and this provision, instead of being proportioned to the wants of the animal, is only so to the capacity of the place allotted for its reception. These holes are generally more than a foot under ground, and often divided into two cells, of which the one serves for a habitation for itself and its young ones, and the other for a granary. The only method of preventing their ravages, which has appeared effectual, is that of setting traps at every tenth pace through the whole extent of each piece of new sown land. There wants no other bait than a roasted nut laid under a flat stone, which is to be supported by a small bit of wood. This they will eagerly attempt to seize; and, being fixed to the wood, no sooner do they touch it than the stone falls upon them, and stifles or crushes them to death.

THE SHORT-TAILED FIELD MOUSE

Is still more common, more generally diffused than the long-tailed kind, and is found almost every where; in woods, in meadows, and even in gardens. It is remarkable for the thickness of its head, and the shortness of its tail, which is not above an inch in length. It forms holes in the earth, where it hoards up corn, nuts, and acorns; though the former of these it seems to prefer to every other kind of aliment. About the month of July, when the corn begins to ripen, they flock together from all sides, and frequently do great damage, by cutting the stalk, in order to come at the ear. In autumn and winter, the greater part of them withdraw into the woods, where they find beech-mast, nuts, and acorns. Some years they appear in such great numbers, that they would destroy every thing, were they to subsist for any length of time. For want of other food, however, they often destroy and eat one another, and are themselves the usual prey of the fox, the wild cat, the martin, the weasel, and of the long-tailed field Mouse.

There is another species of field Mouse, called the Harvest Mouse, which is the smallest of British quadrupeds; two of them not weighing more than one half-penny. This kind makes a beautiful nest, as round as a cricket ball, and about the same size.

THE SHREW MOUSE

SEEMS to form a shade in the order of small animals, and to fill up the vacuum between the rat and the mole. The Shrew Mouse is smaller still than the domestic Mouse, resembles the mole in its snout, which is longer than its jaw bones; in its eyes, which, though rather larger than those of the mole, are, however, in like manner concealed, and much smaller than those of the domestic Mouse; in the number of its claws, of which it has five to each foot; in its tail, and its legs, particularly those behind, which are shorter than those of the domestic Mouse; and, lastly, in its ears, and in its teeth.

This diminutive creature has a strong smell, which is peculiar to itself, and so offensive to cats, that, though they will cheerfully chase and kill the Shrew Mouse, they yet will not eat its flesh like that of the domestic Mouse. It is evidently this noisome odour, this aversion of the cat to it, that gave rise to the notion, that the Shrew Mouse is a venomous animal, and that its bite is so dangerous to cattle of all sorts, and particularly to horses. The truth, however, is, that it is neither venomous nor capable of biting; for it cannot open its mouth sufficiently wide to seize the double thickness of the skin, which is absolutely necessary, in order to bite. The distemper among horses, it is farther to be observed, which the vulgar attribute to the tooth of the Shrew Mouse, is a swelling which proceeds from an internal cause, and has no connexion with any bite, or rather scratch, that this little animal may give.

In winter especially, the Shrew Mouse generally fixes its residence in some hayloft, stable, or barn, where it feeds on grain, insects, and putrified flesh. It is likewise found in woods and fields, where, living on corn, it sometimes conceals itself under moss or leaves, sometimes under the trunks of trees, sometimes in holes abandoned by moles, and sometimes in holes of a smaller size, which it forms for itself by digging with its claws and snout.

The Shrew Mouse produces, it is said, as many at a birth as the domestic Mouse, though less frequently. It has a squeak much more sharp and piercing than the latter. In point of nimbleness, however, it is far inferior;

and as it both sees imperfectly, and runs slowly, there is little difficulty in taking it.

The usual colour of these creatures is brown, with a mixture of red; others of them are ash-coloured; and in all there is a greater or less degree of whiteness upon the belly. They are very common throughout Europe; but they do not seem to have obtained a footing in America.

THE WATER SHREW MOUSE,

THOUGH a native of these regions, was yet unknown to any of our naturalists, till M. Daubenton first discovered it. Every thing necessary to be added here, with respect to the Water Shrew Mouse, is, that it is taken at the sources of fountains, in the morning and evening, as the sun rises and sets; that in the day time it remains concealed in the clefts of rocks, or in holes underground, near the edges of rivulets; that it brings forth in spring, and commonly produces nine young ones at a time.

THE BAT.

AN animal which, like the Bat, is half quadruped and half bird, and which, in fact, is neither the one nor the other, is a kind of monster. In the Bat, the fore feet are, properly speaking, neither wings nor feet, though the animal uses them for the purpose of flying, and occasionally of moving along upon the ground. They are, in fact, two shapeless extremities, of which the bones are of a monstrous length, and connected by a membrane, uncovered with feathers, or even with hair, like the rest of the body: they are a kind of winged paws, or hands, ten times larger than the feet, and, in all, four times longer than the whole length of the body of the animal: they are, in a word, parts which have rather the appearance of a capricious and accidental than a regular and determined production.

To these incongruities, these disproportions of the body and members, may be added the still more striking deformities of the head. In some species, the nose is hardly visible, the eyes are sunk near the tip of the ear, and are confounded with the cheeks; in others, the ears are as long as the body; or else the face is twisted into the form of a horse-shoe, and the nose covered with a kind of crust. Averse, likewise to the society of all other creatures, they shun the light, inhabit none but dark and gloomy to which, after their nocturnal excursions, they to return by break of day, and in which they remai as it were, to the walls, till night again approaches.

Their motion in the air is with less propriety to b ed a flight than a kind of uncertain flutter, whic seem to execute by struggles, and in an awkward r They raise themselves from the ground with di never soar to a great height, and are but imperfect lified to accelerate, or even to direct, their far from being either rapid, or very direct, is p hasty vibrations in an oblique and winding direct in passing along they do not fail to seize all th moths, and other nocturnal insects that come in These they swallow entire; and in their ex meet with the remains of wings and the othe dr which they have not been able to digest. Like q peds, the Bat brings forth its young alive, and like it has teeth and nipples.

From the observations of Spallanzani, it appea the **Long-eared**, the **Horseshoe**, and the N possess an additional sense, by which, wh the power of seeing, they are enabled to avoid cles that may be in the way of their flight.

It is affirmed that these animals do not produce more than two at a birth, and that these they suckle, and even carry along with them as they fly. They unite in numbers to defend each other from the cold; they pass the winter without awaking, without stirring, and without eating, from the end of autumn till spring. Though they can more easily support hunger than cold, and can even subsist a number of days without food, they yet belong to the number of carnivorous animals; for, when opportunity serves, they will devour bacon, and meat of all kinds, whether raw or roasted, whether fresh or corrupted.*

THE FAT SQUIRREL, OR DORMOUSE.

Of this kind of animal we know three species, which, like the marmot, sleep during the winter; namely, the **Fat Squirrel**, the Garden Squirrel, and the common **Dormouse**.

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* See Chap. XV.

though they are all three very different, and of consequence easily known and distinguished.

The Fat Squirrel is nearly of the size of the common Squirrel, and, like it, its tail is covered with long hair. It is of a pale ash colour on the upper parts of the body, and whitish on the under. It is without propriety that the term *sleep* has been applied to the state of these animals during the winter. They are not in a state of natural sleep at this period; they are in a torpor, which is produced by the coldness of the blood, and by which they lose the use of their members and senses. Their internal heat is indeed so small, that it hardly exceeds that of the temperature of the air. When the heat of the air is at ten degrees above the freezing point of the thermometer, the heat of these animals is also at ten degrees. Now, it is well known that the internal heat of man, and of the generality of animals, exceeds at all times thirty degrees; and therefore there is little reason to wonder why these animals, so inferior to all others in point of heat, should become torpid as soon as their little quantity of internal heat ceases to be assisted by the external heat of the air; a circumstance which naturally happens when the thermometer is not more than ten or eleven degrees above congelation. This is the real cause of the torpor of these animals; a cause of which naturalists have not been apprized, and which, nevertheless, extends to all animals that sleep during the winter.

This torpor continues as long as the cause which produces it continues, and ceases when the cold ceases. A few degrees of heat above the tenth or eleventh degree are sufficient to reanimate these creatures; and if they are kept in a very warm place during the winter, they do not become torpid at all.

Though in this torpid state, they are without the smallest motion, though their eyes are shut, and they seem to be deprived of all use of the senses, they yet feel pain when it is very acute. This they testify by a movement of contraction, as also by a little hollow cry, which they even repeat several times. I am inclined to believe, that it is not from too great waste of substance that they sometimes perish in long winters, since in autumn they are excessively fat, and on their reviving in spring, they are found to have still remained so; this abundance of fat being an internal nourishment which is sufficient to support them, and to supply what they lose by perspiration.

The flesh of the Fat Squirrel is not unlike that of the guinea-pig. They were considered as a dainty by the Romans, who fattened great numbers of them in receptacles called *gliraria*. Like the common Squirrel, this animal lives in forests, climbs to the tops of trees, and leaps from branch to branch. This it does less nimbly indeed than the Squirrel, whose legs are longer, whose belly is by no means so big, and which is remarkable for being meagre. Nuts, however, and other wild fruits, form its usual nourishment. It likewise eats little birds, which it takes in the nests. It does not, like the Squirrel, nestle in the upper parts of trees, but makes a bed of moss in the trunks of those which are hollow. It also shelters itself in the clefts of rocks, and always manifests a preference for dry places. It avoids moisture, it drinks little, rarely descends to the ground, and, unlike the Squirrel, which is easily tamed, remains always wild. The species is very generally diffused, but there are few or none of them in England.

THE GARDEN SQUIRREL, OR GREATER DORMOUSE.

The fat Squirrel frequents the forests, and seems to shun our habitations; the Garden Squirrel, on the contrary, inhabits our gardens, and is sometimes to be found in our houses. The species of the latter is also more numerous, and more generally diffused. It is of a tawny colour on the upper part of the body, and whitish ash, tinged with yellow, on the under. Round each eye it has a black circle, and a black spot behind each ear.

These animals nestle in the holes of walls, climb up trees, choose the best fruits, and gnaw them as they begin to ripen. To peaches, in particular, they are exceedingly destructive. They climb up pear, apricot, and other trees; and in a scarcity of other fruit, they eat almonds, nuts, and even leguminous plants. These they carry in great quantities to their holes, where they make a bed of herbs, moss, and leaves. The cold stupifies, the heat revives them; and sometimes there are eight or ten found in one place, all in a state of torpor, all huddled together, and rolled up in a ball, in the midst of their hoard of provisions. Their flesh is not eatable, and has even the disagreeable smell of the house rat.

This animal is to be found in all the temperate climates Many authors have confounded these species together of Europe, and even in Poland, and in Prussia; but it does not appear that there are any in Sweden, or in any of the more northern countries.

THE COMMON DORMOUSE.

Its eyes are sparkling, full, and black, its tail is tufted, and its hair of a tawny red. The throat is white. It never lives in houses, is seldom to be found in gardens, but chiefly frequents the woods, where it finds a shelter in the hollow of some old tree.

The species is by no means numerous, yet they seem to be tolerably common in Italy, and to be not unknown even in the northern climates; but it does not appear to be an English animal; for Ray, who had seen it in Italy, observes, that the small Dormouse which is found in England, is not red upon the back, like the Italian, and that it probably belongs to another species.

The Dormouse becomes torpid by the cold, and rolls itself up in a ball; it revives in mild weather, and hoards up nuts and other dry fruits for future sustenance. It forms its nest in trees, like the squirrel, though generally in a lower situation, among the branches of a nut tree, in a bush, &c. The nest is composed of interwoven moss leaves, and grass; is about six inches in diameter; has no aperture but at the top, and contains three or four young ones.

THE GUINEA-PIG, OR RESTLESS CAVY,

Though originally a native of the warm climates of Brazil and Guinea, lives, however, and breeds in temperate and even cold countries, provided it is properly taken care of. Its skin is of little or no value; and the flesh, though people may, and actually do eat it, is very indifferent food; a circumstance which might, in some measure, be removed, were they to be reared in warrens, where they might have air, space to range in, and a proper choice of herbs. Those which are kept in houses have nearly the same taste as the house rabbit; and of those which have passed the summer in a garden, the taste is less disagreeable, but is still insipid.

The Guinea-pig is much less than the rabbit; its upper lip is only half divided it has two cutting teeth in each jaw; large and broad ears; its hair is of different col white, varied with orange and black, in irregular patches. It has no tail, and is very restless, from which latter circumstance it derives the epithet affixed to one of its names.

The growth of these animals is not entirely completed till the expiration of eight or nine months; though indeed it is in apparent bulk and fat that they chiefly increase till then, the developement of the solid parts being finished before the age of five or six months. The female never goes with young above three weeks; and she has been known to bring forth when only two months old. The first litter is not so numerous as the subsequent litters. It does not amount to more than four or five; the second amounts to five or six, and the rest to seven or eight, and even to ten or eleven. She does not suckle her young longer than twelve or fifteen days. Thus these animals produce at least every two months; and as those which are newly born produce in the same manner, their multiplication is astonishing. In one year a thousand might be obtained from a single couple, did they not frequently destroy each other, and perish from the cold and wet.

The Guinea-pig feeds on all sorts of herbs, and especially on parsley, which it prefers even to bran, flour, or bread. Of apples and other fruits it is also exceedingly fond. Like the rabbit, it eats precipitately, little at a time, but very often. It whines somewhat like a young pig.

So cleanly are Guinea-pigs, that much of their time is spent in licking and smoothing the fur of each other, and of the little ones; and should the latter chance to be dirtied, the mother will never again suffer them to come near her. If kept in a room, it seldom crosses the floor, but creeps round by the wall.

These animals are so delicate, that it is with difficulty they undergo the rigours of winter. When they feel the cold, they assemble together, press close to one another, and in this situation are frequently found dead.

THE MOLE,

Without being blind, has such small eyes, and these so concealed, that it was formerly supposed to be able to make little use of the sense of seeing; but it is now known that its eyes possess all the qualities necessary to distinct vision. It enjoys also the senses of hearing and feeling in an eminent degree. Its skin is soft as silk; and its little paws, which are furnished with five claws, are very different from those of other animals, and almost like the hands of a human being. Proportioned to the size of its body, its strength is great; it possesses the mild habitudes of repose and of solitude; the art of securing itself, of forming, instantaneously, as it were, an asylum to itself, or extending it, and of obtaining, without the necessity of relinquishing it, an abundant subsistence.

The Mole shuts up the entry to its retreat, which it seldom deserts, unless forced to it by heavy rains in summer. It is fond of cultivated grounds, and is never to be found in those which are either muddy, hard, compact, or stony. It requires a soft soil, well supplied with esculent roots, and with insects and worms, of which, indeed, its principal nourishment consists. In the skinning of worms, which they always do before they eat them, they display much expertness; stripping off the skin from end to end, and squeezing out the contents of the body.

As these animals very seldom come above ground, they have but few enemies; and very readily evade the pursuit of animals swifter and stronger than themselves. The chief calamity which befals them is an inundation; and when this happens, they are seen in numbers attempting to save themselves by swimming, and using every effort to reach the higher grounds. The greatest part, however, perish, as well as their young, which remain in the holes behind. Were it not for such accidents, from their great fecundity, they would become extremely troublesome. They generally have four or five at a time; and it is easy to distinguish among other Mole hills, that in which the female has brought forth her young. These are made with much greater art than the rest; and are usually larger and more elevated. It is probable they produce oftener than once a year. Thus far indeed is certain, that new born Moles are found from the month of April to the month of August; a circumstance which, however, may be owing to their having been engendered and brought forth sooner or later in the year.

The hole in which they produce their young is formed with singular skill, and deserves a particular description The female begins by erecting the earth into a tolerably spacious apartment, which is supported within by partitions at proper distance, that prevent the roof from falling. All round this she works, and beats the earth very firm, so as to make it capable of keeping out the rain, let it be ever so violent. As the hillock, in which the apartment is thus formed, is raised above ground, the apartment itself is consequently above the level of the plain, and therefore less subject to accidental slight inundations. The place being thus fitted, she procures grass and dry leaves, as a bed for her young. There they lie secure from wet, and she continues to make their retreat equally free from danger; for all round this hill of her own raising, are holes running into the earth, which go off from the middle apartment, like rays from a centre, and extend about fifteen feet in every direction. These resemble so many walks or chases, into which the animal makes her subterraneous excursions, and supplies her young with such roots or insects as she can provide; but they contribute still more to the general safety; for as the Mole is very quick of hearing, the instant she perceives her little habitation attacked, she takes to her burrow, and unless the earth be dug away by several men at once, she and her young always make good thier retreat.

Moles live in pairs, between which a warm attachment subsists. They are, however, said to be ferocious, and occasionally to tear and eat each other.

Some authors have said, but without foundation, that the Mole and the badger sleep the whole winter. That this is not true of the badger, has been already observed; and as a proof that this animal quits its hole in winter as well as in summer, we have only to view the traces it leaves upon the snow. As for the Mole, so far is it from sleeping during the winter, that it continues its subterranean operations then as well as in summer; and the peasants of France even proverbially remark, that "when Moles are at work, a thaw is at hand." They are indeed fond of warm places; and the gardeners often catch them round their beds in the months of December, January, and February. In pasture lands, and in nurseries of forest trees, they do considerable mischief. In 1740, M. de Buffon planted sixteen acres with acorns, the greatest part of which were speedily carried away by the Moles. Not less than a bushel of acorns was found in some of their burrows.

THE HEDGEHOG

The length of which varies from six to ten inches, has the power of defending itself from an enemy without combating him, and of annoying without attacking him. Possessed of little strength, and of no agility by which it might escape its foes, it has received from Nature a prickly armour, with a facility of rolling itself up in a ball, and of presenting from every part of its body a poignant weapon of defence. Even from its fear this animal obtains another engine of security; the smell of its urine, which, when attacked, it generally sheds, being sufficient to disgust its enemy with the contest, and to keep him at a distance. Thus the generality of dogs are content with barking at the Hedgehog, when it falls in their way, without discovering any inclination to seize it. Of these, however, there are some which, like the fox, have had the address to master it, though of the martin, the polecat, the ferret, the weasel, or any of the birds of prey, it has no dread.

When at large in the country, they are generally found in woods, under the trunks of old trees, as also in the clefts of rocks. I do not believe that they climb up trees, as some naturalists have affirmed, or that they make use of their prickles to carry off the fruit; it is with their mouth they seize it; and though they are very numerous in our forests, yet I have never seen one of them upon a tree. They always remain at the foot, in some hollow space, or under moss. They remain in a state of inactivity all day; they only venture abroad by night, and seldom approach human habitations. They sleep during the winter; and therefore every thing that has been said of their laying up provisions for that season must be false. They at no time eat much, and can subsist very long without any food whatever. Hedgehogs are occasionally eaten, and their flesh is said to be delicate food; their skin is not any longer converted to the smallest use, though the ancients used it for the purpose of a clothes-brush.

The Hedgehog may be rendered domestic, and in that state is very useful in destroying cockroaches and beetles, which he pursues and devours with great activity. He is believed also to destroy mice nearly if not quite as well as a cat. A Hedgehog belonging to the proprietor of an inn at Felton, in Northumberland, was taught to perform perfectly the duty of a turnspit dog. It ran familiarly about the house, and was very obedient.

"In the month of June, 1782," say a correspondent in the Gentleman's Magazine, "a full grown Hedgehog was put into a small yard, in which was a border of shrubs and annuals. In the course of a few days he formed, beneath a small holly tree, a hole in the earth sufficiently large to receive his body. After a while a small shed was built for him in the corner of the yard, and filled with straw; but the animal would not quit its former situation until it was covered with a stone. He then took possession of the shed, and every morning carried leaves from a distant part of the border, to stop its mouth. His principal food was raw meat and mice. Of the latter he would eat six at a time, but never more; and, although these were thrown to him dead, he bit them all in the neck before he began to eat any. He would also eat snails with their shells; but would leave any thing for milk, which he lapped exceedingly slow. To this, even if set six or eight yards distant from his shed, he would almost always come out half an hour before his usual time. If the person who usually fed him neglected to do so, he would follow him along the yard; and if the door was open, he would go into the house. If meat was put near the mouth of his shed in the daytime, he would sometimes pull it in and eat it. As the weather became colder, he carried more leaves into his shed; and sometimes he would not come out for two or three days successively. About the end of November he died; from want of food, as was supposed, but most probably from the severity of the weather."

THE MARMOT

When taken young, is more capable of being tamed than any other wild animal, and nearly as much so as our domestic ones. It will easily learn to perform feats with a stick, to dance, and in every thing to obey the voice of its master. It has a great antipathy to the dog; and when it becomes familiar in a house, and is sure of being supported by its master, it will, in his presence, attack the largest dogs, and boldly fasten upon them with its teeth. Though this creature is not quite so large as a hare, it is yet of a more squat make, and has great strength joined to great agility. It has four teeth in the front of the jaw, which are long and strong enough to inflict a terrible wound; and yet, unless provoked to it, it neither attacks dogs, nor does mischief to any creature whatever. If care be not taken, however, it will gnaw the furniture of a house, and will even make holes through wooden partitions.

As the Marmot has very short thighs, and the toes of its paws are formed much like those of the bear, so it often sits erect, and walks with ease, like that animal. upon its hind feet. With its fore paws it carries its food to its mouth, and eats in an upright posture like the squirrel.

It runs much swifter up hill than down; it climbs trees, and runs up the clefts of rocks, or the contiguous walls of houses, with much facility; so much so, indeed, that it is ludicrously observed of the Savoyards, who are the general chimney-sweepers of Paris, that they have learned their trade from the Marmot.

These animals eat indiscriminately of whatever is given them, whether it be flesh, bread, fruits, herbs, roots, pulse or insects. Of milk and butter, however, they are particularly fond; and, though less inclined to petty thefts than the cat, they are yet never better pleased than when they obtain access to the dairy.

There seems to be a combination of the bear and the ra in the form of the Marmot. Its nose, its lips, and the form of its head, are like those of the hare; it has the hair and claws of the badger, and teeth of the beaver, the whiskers of the cat, the paws of the hare, with a tufted tail and short ears. The colour of its hair on the back is reddish brown. On the belly it is reddish, but softer and shorter. Its voice resembles that of a little dog when it is played with or caressed; but when it is irritated or frightened, it raises a loud and shrill cry, highly offensive to the ear. The Marmot is a very cleanly animal. In autumn particularly, it is loaded with fat, though all the parts of the body are never equally so. The Marmot would be tolerable food, did it not constantly retain somewhat of a disagreeable smell.

This animal, which delights in the regions of ice and snow, and is never found but on the highest mountains, is, nevertheless, most liable to be benumbed by the cold. From the end of September, or the beginning of October, the Marmot generally retires to its hole, and appears not again till about the beginning of April. The place of its retreat is formed with precaution, and finished with art. It is rather wide than long, and very deep, so that it is capable of containing several, without being under a necessity of crowding each other, or injuring the air they breathe. Their feet and claws are formed as if they were designed to dig; and, in fact, they burrow into the ground with amazing celerity, scraping up the earth, and throwing back what they have loosened behind them constantly as they proceed. Still more wonderful is the form of their hole; it resembles the letter Y, the two branches having each an opening that conducts into one channel, which terminates in their general apartment at the bottom. As the whole is contrived on the declivity of a mountain, there is no part of it on a level but the apartment at the end. One of the branches, or openings, issues out, sloping downward; and this serves as a kind of sink, or drain, for the whole family, in which they void their excrements, and through which the moisture of the place finds an easy passage. The other branch, on the contrary, slopes upward, and serves them as a door to go in and out. The apartment at the end is warmly lined with moss and hay. It is even asserted, that this is a public work; that some cut the finest grass, others pile it up, and others take their turns to convey it to the hole. Upon this occasion, it is added, one of them lies upon its back, permits the hay to be heaped upon its belly, keeps its paws upright to make greater room, and in this manner, remaining still upon its back, is dragged by the tail, hay and all, to their common retreats. This practice some assign as a reason for the hair being generally worn away from their backs. However, another and perhaps a better reason may be given for this appearance; namely, their inhabiting cells under ground, and being constantly employed in digging up the earth. Whenever they venture abroad, one is placed as a sentinel sitting on an elevated rock, while the others amuse themselves in the fields below, or are employed in cutting grass, and making it into hay for their future convenience; and no sooner does their trusty sentinel perceive a man, an eagle, a dog, or any other enemy, than he gives notice to the rest by a kind of whistle and is himself the last that takes refuge in the cell.

They make no provision for the winter, foreseeing probably that such a precaution would be useless. But when they perceive the first approaches of the season in which their vital motions are to continue in some measure suspended, they labour very diligently to close up the apertures of their dwellings, which they effect with such solidity, that it is more easy to open the earth any where else, than where they have closed it. They are at that time very fat, and some of them are found to weigh twenty pounds. In this plight they continue for three months longer; but by degrees their flesh begins to waste, and they are quite thin by the end of winter. When their retreat is discovered, they are found each rolled into a ball, and covered with hay. In this state they seem entirely lifeless; they may be taken away, and even killed, without their testifying any sense of pain; and those who find them in this manner carry home the fat ones for food, and the young ones for breeding up and taming. The Marmot produces but once a year, and the litter generally consists of three or four. Their growth is quick, and they live only nine or ten years. They are found in the Alps, Apennines, Pyrenees, in the highest mountains of Germany, in Poland, and in Canada, with a few variations.

END OF VOLUME FIRST.

HUNTING THE SABLE. P. 234.

BUFFON'S
NATURAL HISTORY
OF
MAN, THE GLOBE,
AND OF
QUADRUPEDS,

WITH ADDITIONS FROM CUVIER, LACEPEDE, AND
OTHER EMINENT NATURALISTS.

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NATURAL HISTORY.

PART I.

CHAPTER XIII.

Of carnivorous Animals continued—The Brown Bear—The White Bear—The American Black Bear—The Grizzly Bear—The Thibet Bear—The Bornea Bear—The Large-lipped Bear—The Beaver—Th Racoon—The Brown Coati—The Agouti.

THE BEAR.

THERE is no animal more generally known t Bear, and yet there is none concerning which differences and contradictions have been found the writers of natural history. These unce have arisen from their not distinguishing prop different species. The land Bear must be disting from the sea Bear, which is commonly known by name of the white or Greenland Bear; and the land Bears must again be divided into two species, the brown and the black. There are also white land Bears found in Tartary, Russia, &c. which, though they resemble the sea Bear in colour, differ from it, however, in every other particular. It is not the rigour of the climate that makes them white in winter, like the hares and ermines; they are brought forth white, and remain so all their lives. There are also found Bears whose skins are a mixture of brown and black, which denotes an intermediate species between the white land Bear and the brown black Bear.

THE BROWN BEAR

WE meet with the Brown Bear very frequently, and with the black Bear very rarely, on the Alps. In the forests of the northern countries of Europe and America, on the contrary, the black Bear is very common

The latter is both fierce and carnivorous; the former is only fierce, and constantly refuses to eat flesh.

The Bear is not only a savage, but a solitary animal; he takes refuge in the most unfrequented parts, and the most dangerous precipices of uninhabited mountains. He chooses his den in the most gloomy parts of the forest, in some cavern that has been hollowed by time, or in the hollow of some old enormous tree. Thither he retires alone, and passes a part of the winter without provisions, or without ever stirring abroad. He is not, however, entirely deprived of sensation, like the dormouse or the marmot, but seems rather to subsist upon the exuberance of his former flesh, and only feels the calls of appetite when the fat he had acquired in summer begins to be considerably wasted.

When this happens, which we are told it generally does at the expiration of forty or fifty days, the male forsakes his den; but the female remains confined for four months: by which time she has brought forth her young. That the latter should not only be able to subsist, but even to nurse their offspring, without receiving themselves any food for such a length of time, is highly improbable. When with young, however, it is allowed that they are exceedingly fat, as also that, being covered with a very thick coat, sleeping the greatest part of their time, and giving themselves no exercise or motion, they must necessarily lose very little by perspiration.

Though the males of the brown species devour their new-born little ones, when they find an opportunity for it, yet the females seem, on the contrary, to love them with a ferocious distraction. When once they have brought forth, their fury is more violent, as well as more dangerous, than that of the males. Before the young leave the womb, their formation is perfect: and if either the fœtus of the Bear, or the Bear when newly born, appears at the first glance unformed, it is merely because there is a want of proportion in the body and members even of the grown bear, and because, which is well known to be the case in all animals, the fœtus, or the new-born animal, is always more disproportioned than the grown animal.

The voice of the Bear is a kind of growl, a harsh murmur, which, when enraged especially, is heightened by a clashing of the teeth. Highly susceptib anger, that anger is always furious, and often ca cious. However mild he may appear before his master, and even obedient when tamed, he ought still to be distrusted, still treated with circumspection; nor, on any account, must he be struck on the tip of the nose, or touched on the parts of generation.

This animal is capable of some degree of instructi There are few who have not seen him stand o hind legs, or with these dance in rude and aw measure, to tunes either sung or played on an instru ment. But, even in thus tutoring him, it is necessary, in order to succeed, that the animal should be taken young, and held in constraint ever after. The Bear which has passed his youth, is not to be tamed, nor even held in awe, and shows himself, if not actively intrepid, at least fearless of danger.

The wild Bear turns not from his path, nor offer shun the sight of man; and yet, it is said, by a ce whistle he may be surprised, and so far charmed stop, and stand upon his hind feet. This is the to shoot, or by one method or other to destroy for, when only wounded in an attack, he d fury at his foe, and, clasping him with his fo is sure to stifle or strangle him, unless im ate assistance be given.

The Bear enjoys the senses of seeing, hearing, and feeling, in great perfection; and yet, compared with the size of his body, his eye is very small; his ears are also short; his skin is coarse; and his hair very thick. His smell is exquisite more so, perhaps, than that of any other animal, the internal surface of his nose being very extensive, and excellently calculated to receive the impression of smells. He strikes with his paws as a man strikes with his fists; but in whatever particulars he may bear a rude kind of resemblance to the human species, he is only rendered the more deformed by them; nor do they give him the smallest superiority over other animals.

In no part of the world, perhaps, are Bears more numerous than at Kamstchatka, and no where are they so gentle. They rove about the plains in large droves, yet they never disturb the women and girls, who gather roots and herbs, or turf for fuel, in the very midst o them; nay, they will even eat out of their hands. Their mildness, however, does not preserve them from being persecuted by mankind. For this ingratitude man has, indeed, some excuse, in the great utility of the spoils of the Bear. The Kamstchadale would find it much more difficult to subsist, did not the Bear supply him with many necessary articles. Beds, coverlets, caps, gloves, shoe-soles, and collars for sledge dogs, are made of the skin; the fat is savoury and nutritious as food, and when melted is used as oil; the flesh is highly esteemed; the shoulder blades are converted into sickles for cutting grass; the intestines, when prepared, are worn by the women as masks, to protect the face from the sun, and are also converted into excellent panes for windows; and the heads and haunches are hung on trees, around the dwellings, as ornaments, or as trophies. To the Bear the Kamstchadale is likewise indebted for his scanty knowledge of physic and surgery, which he acquires by noticing what herbs the animal applies to his wounds, or eats when he is labouring under disease; and to the Bear, too, he owes all his ideas of dancing, his Bear dance, as he calls it, being nothing more than a close imitation of his shaggy quadruped instructers.

THE WHITE, OR POLAR BEAR.

Unlike his Kamstchatkan brother, the Polar Bear is distinguished by his tremendous ferocity. In size, too, it far surpasses him, as it sometimes reaches the length of twelve feet. Its head and neck are more lengthened, and the body is longer in proportion to its bulk. In the Polar seas it may literally be said to swarm. There, it is seen not only on the land and fixed ice, but on floating ice several leagues out at sea. In the latter manner White Bears are sometimes conveyed to Iceland, where they are so much dreaded by the inhabitants that a crusade is immediately commenced against them. At sea, the food of this animal is fish, seals, and the carcasses of whales; on land, it preys upon deer and other animals, and will eat various kinds of berries. In winter, it beds itself deeply under the snow or eminences of ice, and awaits, in a torpid state, the return of the sun. It suffers exceedingly when exposed to great heat

Of the ferocity of the Polar Bear, Barentz gives a striking proof. In Nova Zembla they attacked his sailors, carried them off in their mouths with the utmost facility, and devoured them in sight of their comrades. A few years ago some sailors in a boat fired at and wounded one. In spite of his receiving another shot, he swam after the boat, and endeavoured to climb into it. One of his feet was cut off with a hatchet, but he still pursued the aggressors to the ship. Numerous additional wounds did not check his fury; mutilated as he was, he ascended the ship's side, drove the sailors into the shrouds, and was following them thither, when a mortal shot stretched him dead on the deck.

But even this formidable animal is not without its good qualities. It is a faithful mate and an affectionate parent. Hearne tells us that, at certain seasons of the year, the males are so much attached to their mates, that he has often seen one of them, on a female being killed, come and put his paws over her, and rather suffer himself to be shot than abandon her.

"While the Carcase frigate, which went out some years ago to make discoveries towards the North Pole, was locked in the ice, early one morning the man at the masthead gave notice that three Bears were making their way very fast over the frozen ocean, and were directing their course towards the ship. They had no doubt, been invited by the scent of some blubber of a walrus that the crew had killed a few days before, which had been set on fire, and was burning on the ice at the time of their approach. They proved to be a she Bear and her two Cubs; but the Cubs were nearly as large as the dam. They ran eagerly to the fire, and drew out of the flames part of the flesh of the walrus that remained unconsumed, and ate it voraciously. The crew from the ship threw upon the ice great lumps of the flesh of the sea horse, which they had still remaining. These the old Bear fetched away singly, laid every lump before her Cubs as she brought it, and dividing it, gave to each a share, reserving but a small portion to herself. As she was fetching away the last piece, the sailors levelled their muskets at the Cubs, and shot them both dead; and in her retreat they wounded the dam, but not mortally. It would have drawn tears of pity from any but unfeeling minds, to have marked the affectionate concern expressed by this poor beast in the last moments of her expiring young ones. Though she was herself dreadfully wounded, and could but just crawl to the place where they lay, she carried the lump of flesh she had fetched away, as she had done others before, tore it in pieces, and laid it before them; and when she saw that they refused to eat, she laid her paws first upon one, and then upon the other, and endeavoured to raise them up; all this while it was pitiful to hear her moan. When she found she could not stir them, she went off, and when she had got to some distance, she looked back and moaned. Finding this to no purpose, she returned, and smelling, round them, began to lick their wounds. She went off a second time as before; and, having crawled a few paces, looked again behind her, and for some time stood moaning. But still her Cubs not rising to follow her, she returned to them again; and, with signs of inexpressible fondness, went round, pawing them and moaning. Finding at last that they were cold and lifeless, she raised her head towards the ship, and uttered a growl of despair, which the murderers returned with a volley of musket balls. She fell between her Cubs, and died licking their wounds."

Mr. Scoresby mentions a singular circumstance with respect to a part of this animal. "The liver, I may observe, as a curious fact (says he), is hurtful, and even deleterious; while the flesh and liver of the seal, on which it chiefly feeds, are nourishing and palatable. Sailors who have inadvertently eaten the liver of Bears, have almost always been sick after it; some have actually died; and the effect on others has been to cause the skin to peel off their bodies. This is, perhaps, almost the only instance known of any part of the flesh of a quadruped proving unwholesome."

THE AMERICAN BLACK BEAR.

This animal is found, in considerable numbers, in the northern districts of America. In size and form he approaches nearest to the Brown Bear; but his colour is a uniform shining jet black, except on the muzzle, where it is fawn coloured; on the lips and sides of the mouth it is almost gray. The hair, except on the muzzle, is long and straight, and is less shaggy than in most other species. The forehead has a slight elevation, and the muzzle is elongated, and somewhat flattened above. The young ones, however, are first of a bright ash colour, which gradually changes into a deep brown, and ends by becoming a deep black.

The American Black Bear lives a solitary life in forests and uncultivated deserts, and subsists on fruits, and on the young shoots and roots of vegetables. Of honey he is exceedingly fond, and, as he is a most expert climber, he scales the loftiest trees in search of it. Fish, too, he delights in, and is often found in quest of it on the borders of lakes and on the seashore. When these resources fail, he will attack small quadrupeds, and even animals of some magnitude. As, indeed, is usual in such cases, the love of flesh in him grows with the use of it.

As the fur is of some value, the Indians are assiduous in the chase of the creature which produces it. "About the end of December, from the abundance of fruits they find in Louisiana and the neighbouring countries, the bears become so fat and lazy that they can scarcely run. At this time they are hunted by the American Indians. The nature of the chase is generally this: the Bear chiefly adopts for his retreat the hollow trunk of an old cypress tree, which he climbs, and then descends into the cavity from above. The hunter whose business it is to watch him into this retreat, climbs a neighbouring tree, and seats himself opposite to the hole. In one hand he holds his gun, and in the other a torch, which he darts into the cavity. Frantic with rage and terror, the Bear makes a spring from his station; but the hunter seizes the instant of his appearance, and shoots him.

"The pursuit of these animals is a matter of the first importance to some of the Indian tribes, and is never undertaken without much ceremony. A principal warrior gives a general invitation to all the hunters. This is followed by a strict fast of eight days, in which they totally abstain from food; but during which the day is passed in continual song. This is done to invoke the spirits of the woods to direct the hunters to the places where there are abundance of Bears. They even cut the flesh in divers parts of their bodies, to render the spirits more propitious. They also address themselves to the manes of the beasts slain in the preceding chases, and implore these to direct them in their dreams to an abundance of game. The chief of the hunt now gives a great feast, at which no one dares to appear without first bathing. At this entertainment, contrary to their usual custom, they eat with great moderation. The master of the feast touches nothing; but is employed in relating to the guests ancient tales of feats in former chases; and fresh invocations to the manes of the deceased Bears conclude the whole.

"Then they sally forth, equipped as if for war, and painted black; and they proceed on their way in a direct line, not allowing rivers, marshes, or any other impediment to stop their course, and driving before them all the beasts they find. When they arrive at the hunting ground, they surround as large a space as they can; and then contract their circle, searching at the same time every hollow tree, and every place capable of being the retreat of a Bear; and they continue the same practice till the chase is expired.

"As soon as a Bear is killed, a hunter puts into his mouth a lighted pipe of tobacco, and blowing into it, fills the throat with the smoke, conjuring the spirit of the animal not to resent what they are about to do to its body, or to render their future chases unsuccessful As the beast makes no reply, they cut out the string of the tongue, and throw it into the fire. If it crackle and shrivel up (which it is almost sure to do), they accept this as a good omen; if not, they consider that the spirit of the beast is not appeased, and that the chase of the next year will be unfortunate."

In the Tower menagerie there is a very tame and playful American Bear, which was presented to it in 1824. He was originally in the same den with the hyæna, and, except at feeding times, was on good terms with his companion. A piece of meat, however, would occasionally produce a temporary dissension between them; in which the hyæna, though the smallest of the two, had usually the upper hand. On scuh occasions, the defeated Bear would moan most piteously, in a tone somewhat like a sheep bleating, while the hyæna devoured the remainder of his dinner.

THE GRIZZLY BEAR.

LIKE the American black Bear, this animal inhabits the northern part of America; but, unlike him, he is, perhaps the most formidable of all Bears in magnitude and ferocity. He averages twice the bulk of the black Bear, to which, however, he bears some resemblance in his slightly elevated forehead, and narrow, flattened elongated muzzle. His canine teeth are of great size and power. The feet are enormously large; the breadth of the fore-foot exceeding nine inches, and the length of the hind-foot exclusive of the talons, being eleven inches and three quarters, and its breadth seven inches. The talons sometimes measure more than six inches. He is, accordingly, admirably adapted for digging up the ground, but is unable to climb trees, in which latter respect he differs wholly from every other species. The colour of his hair varies to almost an indefinite extent, between all the intermediate shades of a light gray and a black brown; the latter tinge, however, being that which predominates. It is always in some degree grizzled, by intermixture of grayish hairs, only the brown hairs being tipped with gray. The hair itself is, in general, longer, finer, and more exuberant than that of the black Bear.

The neighbourhood of the rocky mountains is one of the principal haunts of this animal. There, amidst wooded plains, and tangled copses of bough and underwood, he reigns as much the monarch as the lion is of the sandy wastes of Africa. Even the bison cannot withstand his attack. Such is his muscular strength that he will drag the ponderous carcass of the animal to a convenint spot, where he digs a pit for its reception. The Indians regard him with the utmost terror. His extreme tenacity of life renders him still more dangerous; for he can endure repeated wounds which would be instantaneously mortal to other beasts, and, in that state, can rapidly pursue his enemy. So that the hunter who fails to shoot him through the brain, is placed in a most perilous situation.

A grizzly Bear has now been for seventeen years an inhabitant of the Tower Menagerie, and is known by the name of Old Martin. He seems to have los none of his original ferocity, and manifests no attachment to his keepers.

THE THIBET BEAR.

The epithet prefixed to the name of this animal sufficiently indicates the country to which the creature belongs. The species, however, unless Cuvier and others are in error, is also to be found in Sumatra. It is particularly distinguished from the Malay and the large-lipped Bears by the thickness of its neck, and the flatness of its head. It has a compact body and heavy limbs, and its claws are little more than half as long as those of the other Indian Bears. The ears are very large. The muzzle is moderately thick, and somewhat lengthened; the upper part black, with a slightly reddish tint on the sides, the edges of the lips flesh coloured, and the hair smooth. From the back part of the head, however, the hair becomes shaggy. A uniform jet black is its invariable colour, except on the lower lip, which is white; and so also is a patch on the front of the neck, shaped like the letter Y, the oblique lines of which pass in front of the shoulders, while the lower line occupies the middle of the chest.

THE BORNEAN BEAR.

In one point this native of Borneo differs strikingly from the other Bears—its head, instead of being flattened, is nearly hemispherical above, rising in a strong arch immediately behind its obtuse and gradually attenuated nose. Its mouth is very expansible, and has a long, narrow, extensile tongue, which the owner can protrude nearly a foot, and then curve spirally inwards; a process which it frequently performs. The claws are very long, firmly arched, tapering gradually to the point, and well calculated for digging the earth. Its short, glistening fur, rather rigid, yet soft to the touch, is a fine jet black on the body, head, and extremities. The muzzle is of a yellowish brown, and the anterior part of the neck has a large broad patch of a more bright and nearly orange tint, and an irregular quadrangular form, deeply notched above.

"It arrived in this country (says the author of 'Th

Tower Menagerie,') about four years ago, and formed until lately one of the most attractive and interesting spectacles among the animals confined in the menagerie. It was brought from Borneo when very young, and during its passage was the constant associate of a monkey and several other young animals. It was thus domesticated in early life, and its manners in confinement greatly resembled those of the Malayan Bear observed by Sir Stamford Raffles, to which it was probably not inferior in sagacity or intellect. It could rest entirely on its posterior feet, and could even raise itself without difficulty to a nearly erect posture; but was more generally seen in a sitting attitude at the door of its apartment, eagerly surveying the visiters and attracting their attention by the uncouthness of its form, and the singularity of its motions. When a morsel of bread or cake was held at a small distance beyond its reach, it would expand the lateral aperture of its nostrils and thrust forward its upper lip as a proboscis in a most ludicrous manner, at the same time making use of its paws to seize the object. After obtaining it and filling its mouth, it would place the remainder with great calmness on its posterior feet, and bring it in successive portions to its mouth. When craving for food, and also while consuming it, it emitted a coarse, but not unpleasant, whining sound, accompanied by a low grunting noise; but if teased at this time, it would suddenly raise its voice to a harsh grating tone. It was excessively voracious, and appeared disposed to eat almost without cessation; a propensity which finally cost it its life, having overgorged itself at breakfast one morning in the course of last summer, during the hot weather, and dying within ten minutes afterwards. This was a severe loss to Mr. Cops, (the keeper) who prized it highly, and to whom, in return, it was greatly attached. On seeing its keeper it would often place itself in a variety of attitudes, to court his attention and caresses, extending its nose and anterior feet, or, suddenly turning round, exposing its back and waiting for several minutes in this posture with its head placed on the ground. It delighted in being patted and rubbed, even by strangers; but violently resented abuse and ill treatment. Its principal food was bread."

THE LARGE-LIPPED BEAR.

THIS animal, which was first brought from India about forty years ago, was at first misnamed the Five-fingered, or Ursine Sloth. It has, however, nothing in common with the family of the sloths; but is a genuine Bear. This curious quadruped is said to have been brought from the interior part of Bengal, where it burrows in the ground. It is covered with black, shaggy hair, which on the back is twelve inches long, where it divides and forms a kind of bunch. The hair on its head is short, and the snout is of a yellowish white. The tail is so short as to be scarcely visible. Its lips are thin and very long, and furnished with muscles, by which it can protrude them in a most singular manner, Its legs and feet resemble those of the common Bear, and on each foot it has five long, crooked, white claws, which it uses either together or separately, like fingers to break its food, and convey it to the mouth. It has no cutting teeth, but two very strong canine teeth, and six grinders in each jaw.

It is a gentle but sluggish animal, and feeds on bread, fruit, nuts, honey, or fat, but refuses roots, and the lean and muscular parts of flesh. In general its motions are slow and languid; but when disturbed or irritated, it appears rather lively, and utters a kind of short, abrupt roar.

THE BEAVER.

IN all countries, as man is civilized and improved, the lower ranks of animals are depressed and degraded. Either reduced to servitude, or treated as rebels, all their societies are dissolved, and all their united talents rendered ineffectual. Their feeble arts quickly disappear; and nothing remains but their solitary instincts, or those foreign habitudes which they receive from human education.

The Beaver seems to be now the only remaining monument of that kind of intelligence in brutes, which, though infinitely inferior, as to its principle, to that of man, supposes, however, certain common projects, certain relative ends in view, projects which, having for their basis society, in like manner, suppose some

BROWN BEAR. P. 5.

GRIZZLY BEAR. P. 13.

particular method of understanding one another, and of acting in concert.

It is allowed, that the Beaver, far from having an absolute superiority over the other animals, seems, on the contrary, to be inferior to some of them as to its qualities merely as an individual; and this fact is confirmed by observing a young Beaver, which was sent to Paris from Canada in the beginning of the year 1758. It is an animal tolerably mild, tranquil, and familiar, though rather, it would seem, gloomy and melancholy. If we consider this animal, therefore, in its dispersed and solitary state, we shall find, that, as to internal qualities, it is not superior to other animals; that it has not more ingenuity than the dog, more sense than the elephant, or more cunning than the fox. It is rather remarkable for the singularities of its internal qualities. Of quadrupeds, the Beaver alone has a flat oval tail, covered with scales, which serves as a rudder to direct its motions in the water. It is the only quadruped that has membranes between the toes on the hind feet, and at the same time none on the fore ones, which it uses as hands in carrying food to the mouth. It is the only one which, while it resembles a terrestrial animal in its foreparts, seems to approach the nature of an aquatic being in its hind ones.

The Beavers begin to assemble in the month of June or July, in order to form a society, which is to continue for the greatest part of the year. They arrive in numbers from every side, and presently form a company of two or three hundred. The place of meeting is commonly the place where they fix their abode; and this is always by the side of some lake or river. If it be a lake in which the waters are always upon a level, they dispense with building a dam; but if it be a running stream, which is subject to floods and falls, they then set about building a dam, or pier, that crosses the river, so as to form a dead water in that part which lies above and below. This dam, or pier, is often four score or a hundred feet long, and ten or twelve feet thick at the base. If we compare the greatness of the work with the power of the architect[*], it will appear enormous; but the solidity with which it is built is still more astonishing than its size. The part of the river over which this dam is usually built is where it is most shallow, and where some great tree is found growing by the side of the stream. This they pitch upon as proper for making the principal part in their building; and, though it is often thicker than a man's body, they yet instantly set about cutting it down. For this operation they have no other instrument but their four incisive teeth, which soon lay it level, and that also on the side they wish it to fall, which is always across the stream. They then set about cutting the top branches, to make it lie close and even, and serve as the principal beam of their fabric.

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[*] The largest Beavers weigh from fifty to sixty pounds, and, in length, are little more than three feet from the tip of the snout to the insertion of the tail

These operations are performed in common. At one time a number of Beavers are employed together at the foot of the tree in gnawing it down; and, when this part of their labour is accomplished, it becomes the business of others to sever the branches, while a third party are engaged along the borders of the river, or lake, in cutting other trees, which, though smaller than the first tree, are yet as thick as the leg, if not the thigh, of a common sized man. These they carry with them by land to the brink of the river, and then by water to the place allotted for their building; where, sharpening them at one end, and forming them into stakes, they fix them in the ground, at a small distance from each other, and fill up the vacant spaces with pliant branches. While some are thus employed in fixing the stakes, others go in search of clay, which they prepare for their purpose with their tails and their feet, and with which, brought home in large quantities, they render their structure still more compact.

This structure is so ingeniously contrived, that it has not only all the extent, and all the solidity, which are requisite, but also a form the most proper for confining the water, and, when it has passed its bounds, for maintaining its weight, or baffling its attacks. At the top of their dike or mole, that is, at the part where it is least thick, they form two or three openings. These they occasionally enlarge or contract, as the river occasionally rises or falls; and when, from inundations either too powerful or too sudden, their works have been damaged, they are, with the utmost diligence and application, on the retreat of the waters, immediately repaired.

After this display of their labours to accomplish a public work, it would be superfluous to add to it a description of their private constructions, were it not that, in history, an account should be given of every fact. and that, in this first grand work of the Beaver, the intention uniformly is, that the little habitation of each family should be rendered more commodious.

This habitation is always furnished with two passages, one for the purpose of a land, and the other of a water excursion. In shape it is almost always either oval or round; sometimes it is from four to five feet in diameter, and sometimes it consists of two, and even three stories, while the walls are always two feet thick. When it happens to consist of but one story, the walls are but a few feet high, over which there is a kind of vault, that terminates the edifice, and serves as a covering for it. It is constructed with such solidity as to be impenetrable to the heaviest rains, to defy the most impetuous winds, and is plastered with such neatness, both outwardly and inwardly, that one might actually suppose it to be the work of man. These animals, nevertheless, use no instrument for the preparation of their mortar, but their feet, or for the application of it but their tails. They chiefly use such materials as are not easily dissolved by water. Their wooden work consists of such trees as grow on the banks of rivers, as these are most easily cut down, stripped of their bark, and carried; and all these operations they perform before they relinquish a tree which they have once attacked. They cut it at the distance of a foot or a foot and a half from the ground. They sit as they work; and, besides the advantage of this convenient posture, they have the pleasure of continually gnawing fresh bark and soft wood, both which they prefer to most other kinds of aliment. Averse to dry wood, they always provide an ample store of these for their subsistence during the winter.* It is near their habitations that they establish their magazines; and to each hut or cabin there is one allotted, of a size proportioned to the number of its inhabitants, to which they have all a common right; nor do they offer to plunder their neighbours.

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* The space allotted for the provision of eight or ten Beavers occupies from twenty-five to thirty feet square, and from eight to ten feet deep.

Hamlets, so to express them, have been seen, composed of twenty and even twenty-five dwellings. Such large settlements, however, are rare. In general, they do not contain more than ten or a dozen families, each of which has its own separate district, magazine, and habitation; nor will it allow any strangers to settle within its enclosure. The smallest dwellings contain two, four, and six; the largest, eighteen, twenty, and it is even said thirty beavers; and it seldom or never happens that the number of males and females is not upon a par. Moderately speaking, therefore, their society may be said to consist frequently of one hundred and fifty or two hundred workmen, who, having first exerted their united industry and diligence in rearing a grand public work, afterwards form themselves into different bodies, in order to construct private habitations.

However numerous the republic of Beavers may be, peace and good order are uniformly maintained in it. A common series of toil has strengthened their union; the conveniences which they have procured for each other, and the abundance of provisions which, after having amassed, they continue to consume together, render them happy within themselves; and, having moderate appetites, entertaining even an aversion to blood and carnage, they have not the smallest propensity to hostility or rapine, but actually enjoy all the blessings which man is only born to desire. Friends to each other, if threatened by any enemies from abroad they know how to avoid them; and for this purpose, on the first alarm, they give notice of their mutual danger, by striking the water with their tails, which sends forth a sound that is heard in their most distant dwellings. On this occasion, each Beaver, as he thinks most expedient, plunges into the water, or conceals himself within the walls of his own habitation, which is in no danger but from the fire of the angry heavens, or from the weapons of man, and which no animal dares attempt to open or to overturn.

These asylums are not only secure, but also very neat and commodious. The floor is covered with verdure, young and tender branches of trees serving them for a carpet, on which they never permit any of their excrements to be left. The window which fronts the water serves them for a balcony, from which th enjoy the fresh air, and bathe themselves the great part of the day. In the water they remain in an u right posture, the head and fore parts only being vi ble. This element is, indeed, so necessary to the or rather gives them so much pleasure, that they see unable, as it were, to live without frequent immersio in it. Sometimes they go to a considerable distan under the ice; and then they are easily taken, attacking the dwelling on one hand, and laying wait for them, at the s e time, at a purposely formed a litt way off in the ice, and to which they are obliged o come for breath.

The habit which this animal has, of continually keeping the tail and all the hind parts of the body in the water, seems to have changed the nature of its flesh. That of the fore parts, till we come to the reins, is of the same quality, taste, and consistency as the flesh of land animals; that of the tail, and of the hind legs and thighs, has the smell, the savour, and all the qualities of fish. As for the tail, in particular, it is even an extremity, an actual portion, of a fish fixed to the body of a quadruped. In length it generally measures a foot, in thickness an inch, and in breadth five or six inches. It is entirely covered over with scales, and has a skin altogether the same as that of a large fish.

The females are said to go four months with young. They bring forth about the close of winter, and their number generally consists of two or three at a time. Nearly at this period the males leave them, and go forth into the fields, where they enjoy all the sweets of the spring. In this season they pay occasional visits to their habitation, but never reside in it. There, however, the females remain employed in suckling, tending, and rearing their little ones, who are in a condition to follow them at the expiration of a few weeks. They then, in their turn, go abroad, where they feed on fish, or on the bark of young trees, and pass the whole of their time upon the water, or among the woods.

Winter is the season which is principally allotted for hunting them, as it is then only that their fur is in perfection; and when, after their fabrics are demolished, a great number happen to be taken, their society is never restored; the few that have escaped captivity or death, disperse themselves, and become houseless wanderers; or concealed in some hole under ground, and reduced to the condition of other animals, they lead a timid life, no longer employ themselves but to satisfy their immediate and most urgent wants, no longer retain those faculties and qualities which they eminently possess in a state of society.

We meet with Beavers in America from the thirtieth degree of north latitude to the sixtieth, and even beyond it. In the northern parts they are very common; and the farther south we proceed, their number is still found to decrease. The same observation holds with respect to the Old Continent: we never find them numerous but in the more northern countries; and in France, Spain, Italy, Greece, and Egypt, they are exceedingly rare. They formerly inhabited both England and Wales, but have long been extinct in both. Giraldus Cambrensis states them to have frequented the river Tievi, in Cardiganshire. They must, however, have been uncommon, as in the tenth century, the Welsh laws valued a Beaver skin at the enormous sum of a hundred and twenty pence. The ancients knew them: and by the religion of the Magi it was forbidden to kill them.

Several authors have said, that the Beaver, being an aquatic animal, could not live solely on land. This opinion, however, is erroneous; for the Beaver which was mentioned in a preceding paragraph, having been taken when quite young in Canada, and always reared in the house, did not know the water when he was brought to it, was afraid of it, and refused to go into it. Even when first plunged into a basin, there was a necessity for keeping him in it by force. A few minutes after, nevertheless, he became so well reconciled to it, that he no longer showed an aversion to his new situation; and, when afterwards left to his liberty, he frequently returned to it of himself, and would even roll about in the dirt, and upon the wet pavement. One day he made his escape, and descended by a cellar staircase into the quarries under the Royal Garden. There he swam to a considerable distance on the stagnated waters which are at the bottom of those quarries; yet no sooner did he see the light of the torches which were ordered down for the purpose of finding him, than he returned, and allowed himself to be taken without making the smallest resistance.

He is an animal familiar without being fawning; and when he sees people at table, he is sure to ask for something to eat. This he does by a little plaintive cry, and by a few gestures of his fore-paws. When he has obtained a morsel, he carries it away, and conceals himself, in order to eat it at his ease. In several instances he has been completely domesticated, and become as docile as a dog. When he sleeps, which he does very often, he lies upon his belly. No food comes amiss to him, meat excepted; and this he constantly refuses, either raw or boiled. He gnaws every thing he comes near; and it was found necessary to line with tin the tun in which he was brought over.

Independently of the fur, which is indeed the most valuable article furnished by the Beaver, this animal furnishes a substance that has been considerably used in medicine. This substance, which is known by the name of *castor*, is contained in two bladders.* The savages, it is said, obtain an oil from the tail of the Beaver, which they employ as a topical remedy for different complaints. The flesh of this animal, though fat and delicate, is yet bitter, and disagreeable to the palate.

There are two kinds of hair on the skin of the Beaver; that next the skin is short, and as fine as down; the upper coat is scantier, thicker, and longer. The downy hair is manufactured into hats, stockings, caps, and other articles. The skin is so considerable an article of traffic, that the species which produces it will, perhaps, at length, be exterminated. At one sale, the Hudson's Bay Company sold about fifty-four thousand; and, in 1798, a hundred and six thousand were exported to Europe and China from Canada alone.

The senses of the Beaver are very acute; and so delicate is its smell, that it will suffer no filth, no bad stench, to remain near it. When kept too long in confinement, and under a necessity of voiding its excrement, it drops them near the threshold of its prison, and, when the door is opened, is sure to push them out.

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* It is pretended that the Beavers extract the liquid which is contained in these bladders, by pressing them with the foot; and that it gives them an appetite when they are averse to food. The truth, however, seems to be, that the animal uses this liquid in order to grease its tail.

THE RACOON

Is an animal of about the same size as a small badger; its body is short and bulky; its fur is fine, long, thick, blackish at the surface, and gray towards the bottom; its head like that of a fox, but its ears are round and shorter; its eyes are large, of a yellowish green, and over them there is a black and transverse stripe; its snout is sharp; its tail is thick, but tapering towards a point, and marked alternately from one end to the other with black and white and brownish rings, and is at least as long as the body; its fore legs are much shorter than the hind ones, and both are armed with five strong, sharp claws.

This animal, while eating, usually supports itself on its hind legs, and uses its paws to hold its food, and it can open an oyster with the utmost dexterity. If water be near, it in general dips its food into it. By its pointed claws it is enabled to climb trees with great facility. It runs up the trunk with the same swiftness that it moves over the plain, and frolics about to the extremity of the branches with great security and ease: on the ground, indeed, it rather bounds than runs, and its motions, though singularly oblique, are yet always quick and expeditious.

The Racoon is a native of North America and the West Indies, nor has it ever yet been found in any part of the Old Continent.

He may be tamed without difficulty, and is then very good-natured and sportive, but is as mischievous as a monkey, and seldom remains at rest. Of ill treatment he is extremely sensible, and never forgives those from whom he has received it. He has also an antipathy to sharp and harsh sounds, such as the bark of a dog and the cry of a child. His fur is used by the hatters, his skin is converted into gloves and upper leather for shoes, and his flesh is considered as a delicacy by the negroes.

THE BROWN COATI.

This animal, of which we are now about to treat, many authors have called *coati-mondi*. It is very different from the animal described in the preceding article. It is of a smaller size than the racoon; its body and neck, its head and nose, are of a more lengthened form; its upper jaw is an inch, or an inch and a half, longer than the lower one; and its snout, which is moveable in every direction, turns up at the point. The eyes of the Coati are also smaller than the eyes of the racoon, and are surrounded by three white spots; its hair is longer and coarser, its legs are shorter, and its feet longer; but, like the racoon, its tail is diversified with rings, alternately black and fulvous; and to all its feet there are five claws.

This animal has a practice of eating its own tail, which, when not mutilated, is longer than its body, and which it generally rears aloft, and can move with ease in any direction.

From this circumstance one general inference may be drawn; namely, that in those parts which are elongated to a great degree, and of which the extremities are consequently very remote from the seat of the senses, from the centre of feeling, that feeling must be weak, and the more so, the greater the distance and the smaller the part.

As for the Coati in other respects, it is an animal of prey, which subsists on flesh and blood, which, like the fox, destroys small animals and poultry, hunts for the nests of little birds, and devours their eggs; and it is probably from this conformity of disposition, that some authors have considered the Coati as a species of small fox. It inhabits the woods of South America. In pursuit of its prey, it climbs trees with much agility. When tamed, which it easily is, it is fond of being caressed, but does not become much attached to its owner.

THE AUGOUTI.

This animal is about the size of a hare, and has been considered, erroneously, as a kind of rabbit, or large rat, by the generality of nomenclators. As it has the hair of a hog, so also it has the voracious appetite of that animal. It eats indiscriminately of all things; and when satiated, it hides the remainder, like the dog or the fox, for a future occasion.

It does not, like the rabbit, dig a hole in the ground but burrows in the holes of trees. Its ordinary food consists of the roots of the country, potatoes, yams and such fruits as fall from the trees in autumn. I uses its fore paws like the squirrel, to carry its food to its mouth; and as its hind feet are longer than the fore ones, it runs very swiftly upon plain ground, or up a hill, but upon a descent it is in danger of falling. Its sight is excellent; its hearing equals that of any other animal; and whenever it is whistled to, it stops to hearken. The flesh is dressed like that of a sucking pig, and of such as are well fed, is tolerable food, though it has always a peculiar taste, and is rather rough.

It is hunted by dogs; and whenever it goes into a sugar-ground, where the canes cover the place, it is easily overtaken; for it is embarrassed every step it takes, so that a man may easily come up with it, and kill it without any other assistance than a stick. When in the open country; it usually runs with great swiftness before the dogs until it gains its retreat, within which it continues to hide, and nothing but filling the hole with smoke can force it out. For this purpose the hunter burns faggots or straw at the entrance, and conducts the smoke in such a manner that it fills the whole cavity. While this is doing, the poor little animal seems sensible of its danger, begs for quarter with a most plaintive cry, but seldom quits its hole till the utmost extremity.

The Agouti seems to be a native of the south parts of America; nor is at all known in the Old Continent. It is, however, very common in Brazil, Guiana, St Domingo, and all the islands around. To the cold and temperate regions of America this animal is an utter stranger.

CHAPTER XIV.

Of Carnivorous Animals continued—The Lion—The Bengal Lion—The Lioness and her Cubs—The Cape Lion—The Puma, or American Lion—The Tiger—The Leopard—The Jaguar—The Panther—The Chetah—The Lynx—The Caracal—The Striped Hyæna—The Spotted Hyæna—The Civet and Zibet—The Javanese Civet—The Genet—The Paradoxorus—The Prehensile Paradoxorus—The Ondatra, and Desman.

THE LION.

It has been remarked, that in all hot climates, the terrestrial animals are larger and stronger than in cold or temperate ones. They are also bolder and more ferocious, all their natural qualities seeming to partake of the ardour of the climates in which they live. The Lion, born beneath the burning sun of Africa, or of India, is above all others the fiercest and most terrible. Our wolves, our other carnivorous animals, far from being his rivals, are hardly worthy to be his providers. The Lions of America (if, indeed, they deserve to be called Lions) are, like the climate in which they are produced, infinitely milder than those of Africa; and, what plainly proves that the degree of fierceness in this animal depends on the degree of heat, is, that, even in the same country, those which inhabit the high mountains, where the air is more temperate, are different in disposition from those that dwell in the plains, where the heat is excessive.

As the Lion has no enemy but man, and his species is now probably reduced to the fiftieth part of what it formerly was, it follows, that the human race, instead of having suffered a considerable diminution since the time of the Romans, is, on the contrary, more numerous and more generally diffused. This superiority in the numbers, and the arts of the human species, while it suffices to conquer the Lion, serves also to enervate and to discourage him; for he is brave only in proportion to the success of his former encounters. Accustomed to measure his strength with every animal he meets, the habit of conquering renders him intrepid and terrible. Having never experienced the dangerous arts and combinations of man, these animals have no apprehensions from his power. They boldly face him, and seem to brave the force of his arms. They are not daunted even with the opposition of numbers: a single Lion of the desert often attacks an entire caravan; and, after an obstinate combat, when he finds himself overpowered, instead of flying, he continues to combat, retreating, and still facing the enemy till he dies. On the contrary, the Lions which inhabit the peopled countries of Morocco, or India, having become acquainted with man, and experienced the superiority of his arms, have lost all their courage, so as to be scared away with a shout; and seldom attack any but the unresisting flocks or herds, which even women and children are sufficient to protect.

The outward form of the Lion seems to speak the superiority of his internal qualities. His figure is striking, his look confident and bold, his gait proud, and his voice terrible. His stature is not overgrown, like that of the elephant, or the rhinoceros; nor is the shape clumsy, like that of the hippopotamus, or the ox. He is in every respect compact and well proportioned, a perfect model of strength joined with agility.

His force and muscular power he manifests outwardly by his prodigious leaps and bounds; by the strong and quick agitation of his tail, which alone is sufficient to throw a man on the ground; by the facility with which he moves the skin of his face, and particularly that of his forehead, which adds greatly to his physiognomy, or rather to the expression of fury in his countenance; and lastly, by the facility he has of shaking his mane, which is not only bristled up, but moved and agitated on all sides when he is enraged.

The largest Lions are about eight or nine feet in length, from the snout to the insertion of the tail, which is of itself four feet long; and these large Lions are about four or five feet in height. Those of the small size are about five feet and a half in length, and three and a half in height. In all her dimensions, the Lioness is about one fourth less than the Lion.

The Lion is furnished with a mane, which becomes longer in proportion as he advances in age. The

Lioness, however, is without this appendage at every age. The American animal, which the natives of Peru call PUMA, and to which the Europeans have given the denomination of *Lion*, has no mane; it is also much smaller, weaker, and more cowardly than the real Lion. In truth, it is more than doubtful whether these animals are at all of the same species.

Both the ancients and the moderns allow that the Lion, when newly born, is in size hardly superior to a weasel; in other words, that he is not more than six or seven inches long; and if so, some years at least must necessarily elapse before he can increase to eight or nine feet. They likewise mention, that he is not in a condition to walk till two months after he is brought forth; but, without giving entire credit to these assertions, we may, with great appearance of truth, conclude that the Lion, from the largeness of his size, is at least three or four years in growing, and that, consequently, he must live seven times three or four years, that is, about twenty-five years.

It is usually supposed that the Lion is not possessed of the sense of smelling in such perfection as most other animals of prey. It is also remarked, that too strong a light incommodes him; that he seldom goes abroad in the middle of the day; that he commits all his ravages in the night; and that when he sees a fire kindled near a herd or flock, he will not venture near it; that though his sight is bad, it is not, however, so faulty as his smell; and that, unlike the dog or the wolf, he rather hunts by the former than by the latter.

The Lion, when hungry, boldly attacks all animals that come in his way; but, as he is very formidable, and as they all seek to avoid him, he is often obliged to hide, in order to take them by surprise. For this purpose he crouches upon his belly, in some thicket, or among the long grass, which is found in many parts of the forest. In this retreat he continues, with patient expectation, until his prey comes within a proper distance; and he then springs after it with such force, that he often seizes it at the first bound. If he misses the effort, and in two or three reiterated springs cannot seize his prey, he continues motionless for a time, seems to be very sensible of his disappointment, and waits for a more favourable opportunity. He devours a great deal at a time, and generally fills himself for two or three days to come. His teeth are so strong that he very easily breaks the bones, and swallows them with the rest of the body. It is reported that he sustains hunger a very long time; but thirst he cannot support in an equal degree, his temperament being extremely hot. He drinks as often as he meets with water, lapping like a dog. He generally requires about fifteen pounds of raw flesh in a day; and seldom devours the bodies of animals when they begin to putrefy; but he chooses rather to hunt for fresh spoil than return to that which he had half devoured before. While young and active, the Lion subsists on what he can obtain by the chase, and seldom quits his native deserts and forests; but when he becomes old, heavy, and less qualified for exercise, he approaches the habitations of man, to whom, and to domestic animals, he then becomes a more dangerous enemy. It is observed, however, that when he sees men and animals together, it is always on the latter, never on the former, that he vents his fury; unless indeed he should be struck, and then, at no loss to know whence the blow came, he instantly deserts his prey, in order to obtain revenge for the injury. The flesh of the camel he is said to prefer to that of any other animal. He is likewise exceedingly fond of that of young elephants, which, from their inability to resist him till they have received the assistance of their tusks, he easily despatches, when unprotected by the dam; nor are there any animals able to oppose the Lion, but the elephant, the rhinoceros, the tiger, and the hippopotamus.

However terrible this animal may be, it is not uncommon, with dogs of a large size, and well supported with a proper number of men on horseback, to chase him, dislodge him, and force him to retire. But for this enterprise it is necessary that the dogs and even the horses, should be previously disciplined; since almost all animals tremble and fly at the very smell of the Lion.

Though the skin of the Lion is firm and compact, it is not, however, proof against a musket ball, nor even a javelin; but he is seldom known to be despatched with one blow. Like the wolf, he is frequently taken by stratagem; and for this purpose a deep hole is dug in the earth, over which, when slightly covered with earth and sticks, some living animal is fastened as a bait. When thus entrapped, all his fury subsides; and if advantage is taken of the first moments of his surprise, or his disgrace, he may easily be chained, muzzled, and conducted to a place of security.

The flesh of the Lion is of a strong and disagreeable flavour; yet the Negroes and the Indians do not dislike it, and it frequently forms a part of their food.

The good qualities, and particularly the courage and magnanimity, of the Lion have been the theme of panegyric to Buffon, and other writers on natural history. Later naturalists, however, are disposed to estimate his merits at a much lower rate. "At the time when men first adopted the Lion as the emblem of courage (says that intelligent traveller, Mr. Burchell) it would seem that they regarded great size and strength as indicating it; but they were greatly mistaken in the character they have given to this indolent, skulking animal, and have overlooked a much better example of courage, and of other virtues also, in the bold and faithful dog." Mr. Barrow also brands him with the character of cowardly and treacherous.

"His forbearance and generosity (says Mr. Bennett,) if the facts be carefully investigated, will be found to resolve themselves into no more than this: that in his wild state he destroys only to satiate his hunger or revenge, and never, like the 'gaunt wolves' and 'sullen tigers,' of whom the poet has composed his train, in the wantonness of his power and the malignity of his disposition; and that, when tamed, his hunger being satisfied, and his feelings being free from irritation, he suffers smaller animals to remain in his den uninjured, is familiar with, and sometimes fond of, the keeper, by whom he is attended and fed, and will even, when under complete control, submit to the caresses of strangers.

"But even this limited degree of amiability, which, in an animal of less formidable powers, would be considered as indicating no peculiar mildness of temper, is modified by the calls of hunger, by the feelings of revenge, which he frequently cherishes for a considerable length of time, and by various other circumstances, which render it dangerous to approach him unguardedly, even in his tamest and most domesticated state, without previously ascertaining his immediate state of mind. On such occasions, no keeper possessed of common prudence would be rash enough to venture on confronting him: he knows too well that it is no boy's play to

——seek the Lion in his den,
And fright him there, and make him tremble there

for in this state of irritation, from whatever cause it may have arisen, he gives free scope to his natural ferocity, unrestrained by that control to which at other times he submits with meek and unresisting patience."

It appears, however, to be a well-authenticated fact, that neither the Lion nor the tiger can bear the steady gaze of the human eye, but are completely cowed by it. A writer in the South African Journal says, "The Bechuano chief, old Peyshow (now in Cape Town) conversing with me a few days ago, said that the Lion very seldom attacks man if unprovoked; but will frequently approach within a few paces, and survey him steadily; and sometimes he will attempt to get behind him, as if he could not stand his look, but was yet desirous of springing upon him unawares. If a person in such circumstances attempts either to fight or fly, he incurs the most imminent peril, but if he have sufficient presence of mind coolly to confront him, without appearance of either terror or aggression, the animal will, in almost every instance, after a little space, retire. The overmastering effect of the human eye upon the Lion has been frequently mentioned, though much doubted by travellers; but, from my own inquiries among the Lion hunters, I am perfectly satisfied of the fact; and an anecdote related to me a few days ago, by Major Macintosh, proves that this fascinating effect is not restricted to the Lion. An officer in India, well known to my informant, having chanced to ramble into a jungle, suddenly encountered a royal tiger. The rencontre appeared equally unexpected on both sides, and both parties made a lead halt, earnestly gazing on each other. The gentleman had no fire arms, and was aware that a sword would be no effective defence in a struggle for life with such an antago nist! But he had heard that even the Bengal tiger might be sometimes checked by looking him firmly in the face. He did so: in a few minutes, the tiger, which appeared prepared to make his final spring, grew disturbed—slunk aside—and attempted to creep round upon him behind. The officer turned constantly upon the tiger, which still continued to shrink from his glance; but darting into the thicket, and again issuing forth at a different quarter, it persevered for above half an hour in this attempt to catch him by surprise; till at last it fairly yielded the contest, and left the gentleman to pursue his *pleasure walk*. The direction he now took, as may be easily believed, was straight to the tents, at double quick time."

It will now be proper to give some description of the two species of Lions, the Asiatic and the African.

THE BENGAL LION.

THE uniformity of his colour is one characteristic which distinguishes the Lion from his congeners of the feline race. Except in his young state, when there is an appearance of stripes, he is of a pale tawny above, which becomes somewhat lighter beneath. A second mark is, the long and flowing mane of the full grown male, which, commencing nearly at the root of his nose, extends backwards over his shoulders, and gracefully undulates on each side of his face and neck. A third is, a long and blackish tuft of hairs which terminates his tail. In size, the Asiatic Lion rarely equals the Southern African. He is of a more uniform and pale yellow, and has a peculiar appendage in the long hairs which begin beneath the neck, and occupy the whole of the middle line of the body below.

The animal described above is called "the Old Lion." This denomination, however, is given only to distinguish him from the Cape Lion, which has been for a shorter period in the Tower. George was his original name.

George and his female companion were taken in Bengal, in 1823, by General Watson. The general while out one morning on horseback, with a double barreled rifle, was suddenly surprised by a large male Lion, which bounded out upon him from a thick jungle

He fired, and it fell dead almost close to his feet. A female then darted out upon him. He wounded her, and she fled into the thicket. Suspecting that her den was close at hand, he followed, soon tracked her to it, and completed her destruction. "In the den were found a beautiful pair of cubs, male and female, supposed to be then not more than three days old. These the general brought away with him, and succeeded, by the assistance of a goat, who was prevailed upon to act in the capacity of foster-mother to the royal pair, in rearing them until they attained sufficient age and strength to enable them to bear the voyage to England. On their arrival in this country, in September, 1823, he presented them to his majesty, who commanded them to be placed in the tower. The male of this pair is the subject of the present, the female that of the succeeding article."

George is fed once in twenty-four hours; and his meal is generally eight pounds of beef, exclusive of bone. This he seizes greedily, tears instantly to pieces with his claws, and ravenously devours; unlike Lions in a state of nature, who, after having slain their victim, are said to pause over it for a considerable time before they satisfy their appetite.

The Lioness has no mane, is of smaller size than the Lion, more slenderly and delicately made and more graceful and agile in her movements. The head of the Lion is almost uniformly elevated; that of the Lioness is almost uniformly carriedon a level with the line of her back, which gives her a sullen and downcast look.

For a considerable time after her arrival in England, the Lioness, as well as the Lion, was exceedingly tame and docile, and was often allowed to roam at large about the open yard. They were both, however, at length put under more restraint, in the fear that they might eventually do mischief. But even long after this, "her disposition was far from exciting any particular fear in the minds of her keepers. As an instance of this, we may mention that when, on one occasion about a year and a half ago, she had been suffered through inadvertence to leave her den, and when she was by no means in good temper, George Willoughby, the under keeper, had the boldness, alone, and armed only with a broom, to venture upon the task of driving her back into her place of confinement, which he finally accomplished, not however, without strong symptoms of resistance on her part, as she actually made three springs upon him, all of which he was fortunate enough to avoid."

Since, however, she gave birth to her Cubs, her temper is totally changed. She is violent beyond measure, suspects every one who approaches her den of an intention to rob her of her cherished offspring, and, as Mr. Bennett eloquently expresses it, "exhibits the truly beautiful but appalling picture of maternal tenderness combined with savage ferocity, each in their utmost intensity of force and colouring."

The Cubs, of which there are three, two male and one female, were whelped on the 20th of October, 1827, the day of the battle of Navarino. They are the finest that were ever bred in England, and, at present, are in the best condition. They have all the playfulness of kittens, and their dam is unremittingly assiduous in licking their fur and keeping them in a state of cleanliness.

THE CAPE LION.

Of the Cape Lion, there are two varieties, which, from the tint of their coats, and particularly of their manes, are designated by the settlers as the Pale and the Black Lion. The latter of these is the larger and more ferocious of the two, and occasionally is found of the enormous length of eight feet from the tip of the nose to the origin of the tail. The tail is usually about half the length of the body. The pale variety is the more common. In the Tower there are specimens of both species.

The colonists at the Cape bear the Lion a deadly hatred for the mischief which he does to them, particularly in the destruction of their horses, for the flesh of which he seems to have an especial liking. Being excellent marksmen, they will almost attack him singly; but the more common mode of attacking him is by hunting parties.

The hunting of an African Lion is described with infinite spirit by Mr. Pringle, who was a settler on the eastern frontier of the Cape Colony. "One night (says he) a Lion, that had previously purloined a few sheep out of my kraal, came down and killed my riding horse about a hundred yards from the door of my cabin. Knowing that the Lion, when he does not carry off his prey, usually conceals himself in the vicinity, and is very apt to be dangerous by prowling about the place in search of more game, I resolved to have him destroyed or dislodged without delay. I therefore sent a messenger round the location, to invite all who were willing to assist in the enterprise, to repair to the place of rendezvous as speedily as possible. In an hour every man of the party (with the exception of two pluckless fellows who were kept at home by the women) appeared ready mounted and armed. We were also reinforced by about a dozen of the 'Bastuard' or Mulatto Hottentots, who resided at that time upon our territory as tenants or herdsmen,—an active and enterprising, though rather an unsteady, race of men. Our friends the Tarkaboors, many of whom are excellent Lion hunters, were all too far distant to assist us, our nearest *neighbours* residing at least twenty miles from the location. We were, therefore, on account of our own inexperience, obliged to make our Hottentots the leaders of the chase.

"The first point was to track the Lion to his covert. This was effected by a few of the Hottentots on foot. Commencing from the spot where the horse was killed, they followed the *spoor*[*] through grass, gravel, and brushwood, with astonishing ease and dexterity, where an inexperienced eye could discern neither footprint nor mark of any kind,—until at length we fairly tracked him into a large *bosch*, or straggling thicket of brushwood and evergreens, about a mile distant.

"The next object was to drive him out of this retreat, in order to attack him in close phalanx, and with more safety and effect. The approved mode in such cases is to torment him with dogs till he abandons his covert, and stands at bay in the open plain. The whole band of hunters then march forward together, and fire deliberately one by one. If he does not speedily fall, but grows angry and turns upon his enemies, they must then stand close in a circle, and turn their horses rear outward; some holding them fast by the bridles, while the others kneel to take a steady aim at the Lion as he approaches, sometimes up to the very horses' heels, couching every now and then as if to measure the distance and strength of his enemies. This is the moment to shoot him fairly in the forehead, or some other mortal part. If they continue to wound him ineffectually till he waxes furious and desperate, or if the horses, startled by his terrific roar, grow frantic with terror, and burst loose, the business becomes rather serious, and may end in mischief; especially if all the party are not men of courage, coolness, and experience. The frontier Boors are, however, generally such excellent marksmen, and withal so cool and deliberate, that they seldom fail to shoot him dead as soon as they get within a fair distance.

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[*] The Hottentot name for a footmark

"In the present instance, we did not manage matters quite so scientifically. The Bastuards, after recounting to us all these and other sage laws of Lion hunting, were themselves the first to depart from them. Finding that the few indifferent hounds which we had made little impression on the enemy, they divided themselves into two or three parties, and rode round the jungle, firing into the spot where the dogs were barking round him, but without effect. At length, after some hours spent in thus beating about the bush, the Scottish blood of some of my countrymen began to get impatient; and three of them announced their determination to march in and beard the Lion in his den, provided three of the Bastuards (who were superior marksmen) would support them, and follow up their fire, should the enemy venture to give battle. Accordingly, in they went (in spite of the warnings of some more prudent men among us,) to within fifteen or twenty paces of the spot where the animal lay concealed. He was couched among the roots of a large evergreen bush, with a small space of open ground on one side of it; and they fancied, on approaching, that they saw him distinctly lying glaring at them from beneath the foliage. Charging the Bastuards to stand firm and level fair should *they* miss, the Scottish champions let fly together, and struck, not the Lion, as it afterwards proved, but a great block of red stone, beyond which he was actually lying. Whether any of the shot grazed him is uncertain, but, with no other warning than a furious growl, forth he bolted from the bush The pusillanimous Bastuards, in place of now pouring in their volley upon him, instantly turned and fled helter-skelter, leaving him to do his pleasure upon the defenceless Scots; who, with empty guns, were tumbling over each other, in their hurry to escape the clutch of the rampant savage. In a twinkling he was upon them, and with one stroke of his paw dashed the nearest to the ground. The scene was terrific! There stood the Lion with his paw upon his prostrate foe, looking round in conscious power and pride upon the bands of his assailants, and with a port the most noble and imposing that can be conceived. It was the most magnificent thing I ever witnessed. The danger of our friends, however, rendered it at the moment too terrible to enjoy either the grand or the ludicrous part of the picture. We expected every instant to see one or more of them torn in pieces; nor, though the rest of the party were standing within fifty paces with their guns cocked and levelled, durst we fire for their assistance. One was lying under the Lion's paw, and the others scrambling towards us in such a way as to intercept our aim at him. All this passed far more rapidly than I have described it. But luckily the Lion, after steadily surveying us for a few seconds, seemed willing to be quits with us on fair terms; and with a fortunate forbearance (for which he met but an ungrateful recompense,) turned calmly away, and driving the snarling dogs like rats from among his heels, bounded over the adjoining thicket like a cat over a footstool, clearing brakes and bushes twelve or fifteen feet high, as readily as if they had been tufts of grass, and, abandoning the jungle, retreated towards the mountains.

"After ascertaining the state of our rescued comrade (who fortunately had sustained no other injury than a slight scratch on the back, and a severe bruise in the ribs, from the force with which the animal had dashed him to the ground,) we renewed the chase with Hottentots and hounds in full cry. In a short time we again came up with the enemy, and found him standing at bay under an old mimosa tree, by the side of a mountain stream which we had distinguished by the name of Douglas Water. The dogs were barking round, but afraid to approach him, for he was now beginning to growl fiercely, and to brandish his tail in a manner that showed he was meditating mischief. The Hottentots, by taking a circuit between him and the mountain, crossed the stream, and took a position on the top of a precipice overlooking the spot where he stood. Another party of us occupied a position on the other side of the glen; and placing the poor fellow thus between two fires, which confused his attention and prevented his retreat, we kept battering away at him till he fell, unable again to grapple with us pierced with many wounds.

"He proved to be a full grown Lion of the yellow variety, about five or six years of age. He measured nearly twelve feet from the nose to the tip of the tail. His fore-leg below the knee was so thick that I could not span it with both hands; and his neck, breast, and limbs appeared, when the skin was taken off, a complete congeries of sinews."

The African Lion, however, is often doomed to a more ignoble death. He is dull of hearing, difficult to be awaked, and when suddenly awaked, has no presence of mind. Of these circumstances the Bushmen of Africa avail themselves to accomplish his destruction. "The wolf and the tiger (says Dr. Philip) generally retire to the caverns and the ravines of the mountains, but the Lion is most usually found in the open plain, and in the neighbourhood of the flocks of Antelopes, which invariably seek the open country, and which manifest a kind of instinctive aversion to places in which their powerful adversary may spring upon them suddenly and unexpectedly. It has been remarked of the Lion, by the Bushmen, that he generally kills and devours his prey in the morning at sunrise, or sunset. On this account, when they intend to kill Lions, they generally notice where the spring-bucks are grazing at the rising of the sun; and by observing, at the same time, if they appear frightened and run off, they conclude that they have been attacked by the Lion. Marking accurately the spot where the alarm took place, about eleven o'clock in the day, when the sun is powerful, and the enemy they seek is supposed to be fast asleep, they carefully examine the ground, and finding him in a state of unguarded security, they lodge a poisoned arrow in his breast. The moment the Lion is thus struck, he springs from his lair, and bounds off as helpless as the stricken deer. The work is done; the arrow of death has pierced his heart, without even breaking the slumbers of the Lioness which may have been lying beside him; and the Bushman knows where, in the course of a few hours, or even in less time, he will find him dead, or in the agonies of death."

THE PUMA.

The Puma, Couguar, or American Lion, is from four to five feet long, but more commonly of the former size, and has a tail of half that length, which has not, like that of the Lion, a terminating brush of hair; neither has the Puma a mane. Indeed, his name of Lion could only have been given to him by careless or unscientific observers, as his uniform sameness of colour is the sole point of resemblance which he has to the king of beasts. He has a small rounded head, a broad and rather obtuse muzzle, and a body which, in proportion, is slenderer and less elevated than that of his more dignified namesake. "The upper parts of his body," says Mr. Bennett, "are of a bright silvery fawn, the tawny hairs being terminated by whitish tips: beneath and on the inside of the limbs he is nearly white, and more completely so on the throat, chin, and upper lip. The head has an irregular mixture of black and gray; the outside of the ears, especially at the base, the sides of the muzzle from which the whiskers take their origin, and the extremity of the tail, are black." The fur of the Cubs has spots of a darker hue, which are visible only in certain lights, and disappear when the animal is full grown. Both the sexes are of the same colour.

The Puma was once spread over the whole wide extent of the new world, from Canada to Patagonia. The progress of civilization has, however, circumscribed his range, and has rooted him out in many places. Notwithstanding his size and strength, he is cowardly; and, like almost all cowards, he is sanguinary. If he find a flock of sheep unprotected, he will destroy the whole, merely that he may enjoy the luxury of sucking their blood. As he possesses much timidity and little swiftness, and frequents the open plains, he generally falls a victim when the hunter pursues him with the unerring lasso.

In seizing its prey, the Puma crawls softly on his belly through the shrubs and bushes, conceals itself in ditches, or assumes a fawning appearance. As soon, however, as it can reach its victim, it leaps on its back by one bound, and soon rends it to pieces. Molina tells us that, in Chili, where the husbandmen tether their horses in the fields by pairs, the Puma kills and drags one away, and compels the other to follow by occasionally striking it with his paw. All animals are not thus easily vanquished. Asses defend themselves with their heels, and are often victorious; and cows form themselves into a circle round their calves, turn their horns towards the assailant, and not unfrequently destroy him. Even a woman or a child can put him to flight. When hunted with dogs, however, and cut off from his retreat to a rock or a tree, he places himself under the trunk of a large tree, and fights furiously.

The Puma is easily tamed, and in captivity becomes tractable, and even attached. It loves to be noticed and caressed, expresses its pleasure by purring, will follow its owner about like a dog, and has been known to suffer children to ride upon its back.

THE TIGER.

In the class of carnivorous animals the lion is the foremost. Immediately after him follows the Tiger; which, while he possesses all the bad qualities of the former, seems to be a stranger to his good ones. To pride, to courage, to strength, the Lion adds greatness, and sometimes, perhaps, clemency; while the Tiger, without provocation, is fierce; without necessity, is cruel. Thus it is throughout all the classes of Nature, in which the superiority of rank proceeds from the superiority of strength. The first class, sole masters of all, are less tyrannical than the inferior classes, which, denied so full an exertion of authority, abuse the powers intrusted to them.

More, therefore than even the lion, the Tiger is an object of terror. He is the scourge of every country which he inhabits Of the appearance of man, and of all his hostile weapons, he is fearless; wild animals as well as tame ones fall sacrifices before him; the young elephant and rhinoceros he sometimes attacks; and sometimes, with an increased audacity, he braves the lion himself.

The form of the body usually corresponds with the nature, the disposition of the animal. The Tiger, with a body too long, with limbs too short, with a head uncovered, and with eyes ghastly and haggard, has no characteristics but those of the basest and most insatiable cruelty. For instinct he has nothing but a uniform rage, a blind fury; so blind indeed, so undistinguished, that he frequently devours his own progeny, and, if she offers to defend them, tears in pieces the dam herself.

Happy is it for the rest of nature that this animal is not common, and that the species is chiefly confined to the warmest provinces of the East. The Tiger is found in Malabar, in Siam, in Bengal, and in all the countries which are inhabited by the elephant and the rhinoceros.

When he has killed a large animal, such as a horse or a buffalo, he does not choose to devour it on the spot, fearing to be disturbed; and in order to feast at his ease, he carries off his prey to the forest, dragging it along with such ease that the swiftness of his motion seems scarcely retarded by the enormous load he sustains.

To give a still more complete idea of the strength of this terrible creature, we shall quote a passage from Father Tachard, who was an eye-witness of a combat of one Tiger against two, and even three, elephants at Siam. For this purpose, the king ordered a lofty palisade to be built of bamboo cane, about a hundred feet square; and in the midst of this were three elephants appointed for combating the Tiger. Their heads and part of their trunks were covered with a kind of armour like a mask, which defended that part from the assaults of the fierce animal with which they were to engage. As soon, says this author, as we were arrived at the place, a Tiger was brought forth from his den, of a size much larger than we had ever seen before. He was not at first let loose, but held with cords, so that one of the elephants approaching gave him three or four blows with his trunk on the back, with such fo that the Tiger was for some time stunned, and lay wi out motion, as if he had been dead. As soon, however, as he was let loose, and at full liberty, although the first blows had greatly abated his fury, he made at the elephant with a loud shriek, and aimed at seizing his trunk. But the elephant, wrinkling it up with great dexterity, received the Tiger on his great teeth, and tossed him up into the air. This so discouraged the furious animal, that he no more ventured to approach the elephant, but made several circuits round the palisade, often attempting to fly at the spectators. Shortly after, a second, and then a third elephant were sent against him, and they continued to strike him so terribly with their trunks, that he once more lay for dead; and they would certainly have killed him, had not a stop been put to the combat.

The Tiger, of which Father Gouie has communicated to the Academy of Sciences an anatomical description, composed by the Jesuit Fathers at China, seems to belong to the true species, as does also that which the Portuguese have distinguished by the name of *Royal Tiger*. Dellon expressly says, in his Travels, that there is no country of India in which Tigers so much abound as Malabar; that there the species are numerous, but that the largest of all is that which the Portuguese call the *Royal Tiger*, which is very rare, and is as large as a horse.

The species of the Tiger has always been much rarer, and much less generally diffused, than that of the lion. Like the lioness, nevertheless, the Tigress produces four or five young ones at a birth. From her nature she is fierce at all times; but when surrounded with her infant progeny, and in the smallest danger of losing them, her rage, her fury, becomes extravagant. To oppose the daring invaders of her den, she braves every danger. On such occasions, she pursues the spoiler with an enmity the most inveterate; and he, contented to lose a part in order to save a part, is frequently obliged to drop one of her cubs. With this she immediately returns to her den, and again pursues him: he then drops another; and, by the time she has returned with that, he generally escapes with the remainder. Should her young be torn from her entirely, with hideous cries she expresses her agony, her despair, and follows the captor to the very town, or ship, in which he may have taken refuge, and dares him, as it were, to come forth.

The skins of these animals are much esteemed all over the East, particularly in China; the Mandarines cover their seats of justice in the public places with them, and convert them into coverings for cushions in winter. The Indians eat the flesh of the Tiger, and find it neither disagreeable nor unwholesome.

Such is the character which Buffon and many other naturalists have given to the Tiger, and it certainly is not calculated to prejudice us in his favour. More recent writers have, however, and apparently with justice, endeavoured to remove a part of the odium which has been thrown upon him. Mr. Bennett, the scientific and acute author of the description of the animals in the Tower Menagerie and the Zoological Gardens, has laboured with much eloquence to raise the Tiger in the scale of estimation. "Closely allied to the lion (says he,) whom he resembles in power, in external form, in internal structure, in zoological character, in his prowling habits, and in his sanguinary propensities, the Tiger is at once distinguished from that king of beasts, and from every other of their common genus, by the peculiar marking of his coat. On a ground which exhibits in different individuals various shades of yellow, he is elegantly striped by a series of transverse black bands or bars, which occupy the sides of his head, neck, and body, and are continued upon his tail in the form of rings, the last of the series uniformly occupying the extremity of that organ, and giving to it a black tip of greater or less extent. The under parts of his body and the inner sides of his legs are almost entirely white; he has no mane, and his whole frame, though less elevated than that of the lion, is of a slenderer and more graceful make. His head is also shorter, and more rounded.

"Almost in the same degree that the lion has been exalted and magnified, at the expense of his fellow brutes, has the Tiger been degraded and depressed below his natural level. While the one has been held up to admiration, as the type and standard of heroic perfection, the other has, with equal capriciousness and disregard of the close and intimate relationship sisting between them, been looked upon by mankin general with those feelings of unmingled horror detestation which his character for untameable fero and insatiable thirst of blood was so well calculate inspire. It requires, however, but little considera on to teach us that the broad distinction, which has drawn, cannot by possibility exist; and the reco observations of naturalists and travellers, both at h and abroad, will be found amply that the difference in their charact which so much stress has been laid, is in slight and unessential as that which exists in their corporeal structure.

"Unquestionably the Tiger has not the majesty of the lion; for he is destitute of the mane, in which that majesty chiefly resides. Neither has he the same calm and dignified air of imperturbable gravity, which is at once so striking and so prepossessing in the aspect of the lion. But, on the other hand, it will readily be granted, that in the superior lightness of his frame, which allows his natural agility its free and unrestricted scope, and in the graceful ease and spirited activity of his motions, to say nothing of the beauty, the regularity, and the vividness of his colouring, he far excels his competitor, whose giant bulk and comparative heaviness of person, added to the dull uniformity of his colour, detract in no small degree from the impression produced by his noble and majestic bearing.

"In comparing the moral qualities of these two formidable animals, we shall also find that the shades of difference, for at most they are but shades, which distinguish them, are, like their external characteristics, pretty equally balanced in favour of each. In all the leading features of their character, the habits of both are essentially the same. The Tiger, equally with the lion, and in common indeed with the whole of the group to which he belongs, reposes indolently in the security of his den, until the calls of appetite stimulate him to look abroad for food. He then chooses a convenient ambush, in which to lie concealed from observation, generally amid the underwood of the forest, but sometimes even on the branches of a tree, which he climbs with all the agility of a cat. In this secret covert he awaits with patient watchfulness the approach of his prey, upon which he darts forth with an irresistible bound, and bears it off in triumph to his den. Unlike the lion, however, if his first attack proves unsuccessful, and he misses his aim, he does not usually slink sullenly back into his retreat, but pursues his victim with a speed and activity which is seldom baffled even by the fleetest animals.

"It is only when this close and covert mode of attack has failed of procuring him the necessary supply, that, urged by those inward cravings, which are the ruling impulse of all his actions, he prowls abroad under the veil of night, and ventures to approach the dwellings of man, of whom he does not appear to feel that instinctive awe which the lion has been known so frequently to evince. But even on such occasions, and although impelled by the strong stimulus of famine, he is in general far from unmindful of his own security; but creeps slowly along his silent path with all the stealthy caution so characteristic of the feline tribe. Occasionally, however, when the pangs of hunger have become intolerable, and can no longer be controlled even by the overpowering sway of instinct, he will boldly advance upon man himself in the open face of day, and brave every danger in the pursuit of that object which, to the exclusion of every other sentiment, appears under such circumstances wholly to engross his faculties.

"It is evident then that in the general outline of his habits, and even in most of the separate traits by which his character is marked, he differs but little from the lion. His courage, if brute force stimulated by sensual appetite can deserve that honourable name, is at least equal; and as for magnanimity and generosity, the idea of attributing such noble qualities to either is in itself so absurd, and is so fully refuted by every particular of their authentic history, that it would be perfectly ridiculous to attempt a comparison where no materials for comparison exist."—"Endowed with a degree of force, which the lion and the elephant alone can equal, he carries off a buffalo in his tremendous jaws, almost without relaxing from his usual speed. With a single stroke of his claws he rips open the body of the largest animals; and is said to suck their blood with insatiable avidity. Of the correctness of the latter state at least in its full extent, there is however strong r son to doubt. The Tiger does not, according to most credible accounts, exhibit this propensity to drinking the blood of his victims in any greater degree than the rest of his carnivorous and blood-thirsty companions. In this, as in other instances, fear l drawn largely on credulity, and the simple and su ciently disgusting fact has been amplified and exag rated with all the refinements upon horror which terrified imagination c uggest.

"In making these observations it is far from intention to become the apologists of this ferocious beast: our object is simply to place him in the rank which he deserves to hold, on a level with those animals with whom Nature has decreed that he should be associated no less in character than in form. In his wild and unrestricted state, he is unquestionably one of the most terrible of the living scourges, to whose fatal ravages the lower animals, and even man himself, are exposed. But in captivity, and especially if domesticated while young, his temper is equally pliant, his disposition equally docile, and his manners and character equally susceptible of amelioration, with those of any other animal of his class. All the stories that have been so frequently reiterated, until they have at length passed current without examination as accredited truths, of his intractable disposition and insensibility to the kind treatment of his keepers, towards whom it is alleged that he never exhibits the slightest feelings of gratitude, have been proved by repeated experience to be utterly false and groundless. He is tamed with as much facility, and as completely, as the lion; and soon becomes familiarized with those who feed him, whom he learns to distinguish from others, and by whom he is fond of being noticed and caressed. Like the cat, which he resembles so closely in all his actions, he arches his broad and powerful back beneath the hand that caresses him; he licks his fur and smooths himself with his paws; and purrs in the same mild and expressive manner when he is particularly pleased. He remains perfectly quiet and undisturbed, unless when hungry or irritated, and passes the greatest part of his time in listless repose. His roar is nearly simi lar to that of the lion, and, like his, is by no means to be regarded as a symptom of anger, which he announces by a short and shrill cry, approaching to a scream."

That the Tiger is not irreclaimably ferocious, and that he is capable not merely of a capricious and transient liking, but of an enduring attachment, the following story affords an extraordinary and convincing proof. "A beautiful young Tiger, brought in the Pitt East Indiaman from China, in the year 1790, was so far domesticated as to admit of every kind of familiarity from the people on board the ship. It seemed to be quite harmless, and was as playful as a kitten. It frequently slept with the sailors in their hammocks; and would suffer two or three of them to repose their heads on its back as upon a pillow, while it lay stretched out upon the deck. In return for this indulgence, it would, however, now and then steal their meat. Having one day stolen a piece of beef from the carpenter, he followed the animal, took the meat out of its mouth, and beat it severely for the theft: which punishment it suffered with all the patience of a dog. It would frequently run out on the bowsprit; climb about the ship like a cat; and perform many other tricks, with an agility that was truly astonishing. There was a dog on board, with which it would frequently play in the most diverting manner imaginable. This animal was taken on board the ship when it was only a month or six weeks old, and arrived in England before it had quite completed its first year. On its arrival it was presented to the king, and was afterwards deposited in the Tower of London. It even there continued to be perfectly good natured, and was in no instance known to be guilty of any savage or mischievous tricks.

"In the year 1801, one day after this tiger had been fed, his keeper put into the den to him, a small, rough black terrier puppy, a female. The beast suffered it to remain uninjured, and soon afterwards became so much attached to it, as to be restless and unhappy whenever the animal was taken away to be fed. On its return the Tiger invariably expressed the greatest symptoms of delight, always welcoming its arrival by gently licking over every part of its body. In one or two instances, the terrier was left in the den, by mistake during the time the Tiger had his food. The sometimes ventured to eat with him, but the T generally appeared dissatisfied with this liberty. After a residence with the Tiger of several months, the terrier was removed to make way for a little female Dutch mastiff. It was, however, thought advisable, before the terrier was taken away, to shut up the mastiff for three or four days among the straw of the Tiger's bed, to take off, if possible, any smell that might be offensive to the animal. The exchange was made soon after the animals had been fed; the Tiger seemed perfectly satisfied with his new companion, and immediately began to lick it, as he had before done the terrier. The dog seemed at first in considerable alarm with so formidable an inmate, but in the course of the day he became perfectly reconciled to his situation. This diminutive creature the Tiger would suffer to play with him, with the greatest good nature. I have myself, says Mr. Bingley, seen it bark at him, and bite him by the foot and mouth, without his expressing the least displeasure. When the dog in its frolic, seized his foot, he merely lifted it up out of its mouth, and seemed otherwise heedless of its attacks.

"Strange dogs were several times put into the Tiger's den after his feeding, and he in no instance attempted to injure them. Mr. Cross, the present keeper of Exeter 'Change, and who formerly had the care of the animals in the Tower, informed me that he could himself have ventured in safety into the den. The ship carpenter, who came over with the Tiger, came to the Tower to see him. The animal, though they had been separated more than two years, instantly recognised a former acquaintance, rubbed himself backward and forward against the grating of his den, and appeared highly delighted. Notwithstanding the urgent request that he would not expose himself to so much danger, the man begged to be let into the den, and with so much entreaty, that he was at last suffered to enter. The emotions of the animal seemed roused in the most grateful manner. He rubbed himself against him, licked his hands, fawned upon him like a cat, and in no respect attempted to injure him. The man remained there two or three hours; and he at last began to fancy there would be some difficulty in getting out alone. Such was the affection of the animal towards his former friend, and so close did he keep to his person, as to render his escape by no means so easy as he had expected. With some care, however, he got the Tiger beyond the partition of the two dens, and the keeper watching his opportunity, closed the slide, and separated them."

THE JAGUAR,

Which is sometimes called the American Tiger, is one of the most formidable animals of the New World. He is to be found in the southern division of America, from Paraguay to Guiana; but he does not appear to inhabit to the northward of the isthmus of Darien. Even in the south the race is gradually growing more rare, in consequence of the double temptation to destroy him, which is offered by the desire of getting rid of a beast so destructive to the flocks, and by the high price which is obtained for his skin.

More robust and more clumsy than the leopard, he is also much superior in size, as he often measures four or five feet from the nose to the root of the tail. His head is larger and rounder than the leopard's, his limbs are shorter, and his tail is of such a length as only to allow the tip to trail on the ground when the animal stands erect. Above the line of the eyes, the profile is also more prominent. "These differences of form (says Mr. Bennett) are accompanied by differences in colour and markings equally decisive. The general appearance is at the first glance the same in both; but the open roses of the leopard are scarcely more than half the size of those of the Jaguar, and they all enclose a space of one uniform colour, in which, unless in some rare and accidental instances, no central spots exist, while in the latter animal most of those which are arranged along the upper surface near the middle line of the back are distinguished by one or two small black spots enclosed within their circuit. The middle line itself is occupied in the leopard by open roses intermixed with a few black spots of small size and roundish form; that of the Jaguar, on the contrary, is marked by one or two regular longitudinal lines of broad elongated deep black patches, sometimes extending several inches in length, and occasionally forming an almost continuous band from between the shoulders to the tail. The black rings towards the tip of the latter are also more completely circular than in the leopard."

The Jaguar is a solitary animal, residing in forests, especially near large rivers. He is an excellent swimmer. D'Azara tells us, partly from personal observation, that, after a Jaguar had destroyed a horse, he dragged the body sixty paces, and then swam with it over a broad and deep river. He is equally expert at climbing. "I have seen (says M. Sonini) in the forests of Guiana, the prints left by the claws of the Jaguar on the smooth bark of a tree from forty to fifty feet in height, measuring about a foot and a half in circumference, and clothed with branches near its summit alone. It was easy to follow with the eye the efforts which the animal had made to reach the branches: although his talons had been thrust deeply into the body of the tree, he had met with several slips, but he had always recovered his ground, and, attracted no doubt by some favourite object of prey, had at length succeeded in gaining the very top."

The Jaguar lies in ambush for his prey, on which he pounces suddenly, and his great muscular strength enables him instantly to bear it to the ground. Man he does not often attack, and never but by stealth. While M. Sonini was travelling in Guiana, his party was closely dogged for three nights by one of these animals, which eluded all their attempts to shoot it, and would, doubtless, have carried off any individual who might have unguardedly exposed himself.

Ferocious as he is in his wild state, the Jaguar, when captive, becomes tame and even mild, and is particularly fond of licking the hands of those with whom he is familiar.

The taking of the Jaguar forms a portion of the war-like features distinguishing the Indians of South America, particularly the Laneros, or men of the plains. One inducement a Laneros has in pursuing the Jaguar is the honour of the feat—for the value of its skin and the little depredations it commits on the flocks, would never, I apprehend (says a late traveller in South America) induce him to risk a single combat with such fierce animals; but there is a stronger stimulus, viz that killing seven Jaguars, or six tigers, will give him the title of *guapo*, or warrior, and the privilege or choosing the fattest virgin for his companion in the tribe; for with them the lady who is most *en bon point* is most beautiful. This alone is a sufficient inducement; and they endeavour to complete their task as early as the age of seventeen. At the approach of the breeding season, they watch with great assiduity the battles that take place between the male and the female, as this is a sure indication of her littering, not wishing to have the male know where she deposits the Cubs, as some naturalists assert that he eats them; others that he hugs them to death. However this be, she never suffers him to approach the jungle, if I may be allowed to call it so, until they are able to run after her. During this period he awaits her with the most tender solicitude, and even brings her a portion of his prey. He is seen hovering instinctively about the place where she is couched at noontide. When the Laneros perceives this, he envelopes himself in a Jaguar's skin, and approaches him, taking good care to have the wind in his favour, as the Jaguar's keen scent would soon discover the imposition. Even this sagacity and instinct they think they have got over, by burning plantain leaves so as to take away for hours any scent which the human body has; though this is probably a mere fancy. As soon as the Laneros perceives the Jaguar, he runs from him on all fours, and endeavours to mimic the whining cry of the beast, which by some is said to be like a cat, or like hogs crouching in a sty; the latter is what I would compare them to, as I have seen them mustering by night previous to hunting. As soon as the male perceives him, he bounds towards him; when the Laneros dexterously throws the noose (the lasso) over him, and soon strangles him. Sometimes he wounds him with his lance, and then a sanguinary conflict takes place. As the Laneros has his left arm well bound round with tanned horse-skin, impervious to the Jaguar's tusks, he presents his left hand; as soon as the Jaguar seizes it, he is stabbed with a long knife, which seldom misses the heart, as the principal excellence of a *guapo* is killing the beast with as few stabs as possible. As soon as he dispatches the male, the female becomes an easy prey. Sometimes the Laneros, when their numbers are complete, will, to show dexterity and address, decoy the Jaguar into a d when the man uncovers and shows himself; the Ja endeavours to retreat, but is prevented by other Ind s, who scare him with firebrands, for they can produce fire by rubbing two pieces of wood together, as ick as if with tinder. In this manner they worry him dogs, while they keep him at bay until the w arrive to witness their cruelty. As the Jaguar frantic he endeavours to bite at every thing near as often as the creature opens his mouth have a burning torch rammed into his thr ness exhausts him, and he is no longer his jaws; then the women and boys descend from high positions, chop off his paws, hammer out his teeth, and often skin him alive, while the boys are smeared with the blood, in order to make them good warriors, and the mothers take delight in seeing the animosity they have to the creature, even when no longer able to do any injury. As to the female Jaguar, they have only to come near her couching place to provoke a quarrel, as she will often attack them before they are within two hundred yards of it: in her they sometimes find a more formidable enemy than in the male, although much inferior in point of size and strength, but more subtle and crafty: their bite is difficult to heal, and the Laneros think a wound from a Jaguar a great disgrace; so much so that a young aspirant for the title of *guapo*, who had the misfortune of being wounded in a rencontre, was so much ashamed of acknowledging it, that he suffered a mortification sooner than expose the wound, although he was well aware the women possessed a salve that would cure him.

THE LEOPARD.

THIS formidable and sanguinary animal is found nearly throughout the whole of Africa, and in eastern and southern Asia. He usually measures about three feet in length, exclusive of the tail, but sometimes reaches four feet. His appearance indicates his natural disposition. He has a restless eye and a sinister countenance, and all his motions are hasty and abrupt. In rapidity, agility, and precision of motion he is unrivalled by any other animal; an advantage which he owes to the strength of his muscles, the suppleness of his joints, the extreme pliability of his spine, the greater lateral compression of his body, and the slender proportions of his limbs. His prey, on which he darts from his hiding-place, and even pursues up the trees, consists of antelopes, monkeys, and the smaller quadrupeds. Usually, he shuns man, but, when closely pressed, he turns upon the hunter, and hunger will drive him to attack, though by stealth, the human race.

"Even among the cats (says Mr. Bennett) he is remarkable for extreme sleekness and excessive agility. He is well distinguished from all the other species by the vividness of his colouring and the beauty of his markings. These consist of numerous rows of large rose-like spots passing along his sides, each formed of the confluence of several smaller black spots into an irregular circle enclosing a fawn-coloured centre, upon a general ground colour of light yellow. On his head, neck, and limbs, and the central line of his back, the spots run into one another so completely as to form full patches of smaller size than the open roses, and without central yellow. The under parts of his body, as is usual in most quadrupeds, become gradually of a lighter hue, the throat, chest, and abdomen, being of a pure and delicate white. His tail is equal in length to the entire body excluding the head; and is marked by a continuation of the open roses of the sides, which become towards its extremity separated in such a manner as to surround the upper surface with partial rings of black alternating with white. The whiskers are long and white, and implanted in a series of black lines which traverse his lips."

In captivity the Leopard has been sometimes brought to a considerable degree of tameness. It is not, however, very safe to trust them; for their original nature is now and then unexpectedly displayed. The female Leopard in the Tower is extremely tame, suffers herself to be patted by the keeper, and licks his hands. She has a curious propensity to destroy such articles of dress as she can seize; and has torn to pieces hundreds of parasols, umbrellas, muffs, and hats, which the owners unwarily suffered to come within reach of her sudden and agile spring.

THE PANTHER

Resembles the tiger in its habits, and the leopard in its skin. Like the tiger it has an insatiable thirst of blood, and an untameable ferocity; like the leopard its skin is spotted, but is less beautiful than the skin of that animal. It seems, in truth, only a large variety of the leopard. The Panther is usually more than six feet long, independent of the tail, which is about three feet in length. In Africa, one was killed by Major Denham, which was more than eight feet in length. His hair is short, sleek, and mossy, and his colour is, in general, of a bright tawny yellow, elegantly marked with black spots, disposed in circles of four or five each, with a single spot in the centre: his chest and belly are white. He has short and pointed ears, fierce and restless eyes, a strong harsh cry, and a savage aspect. So rapid are his movements that few animals can escape him, and such is his agility that he climbs trees in pursuit of his prey, and is sure of seizing his victim. The flesh of animals is said to be his favourite food, but when pressed by hunger he makes his attacks without discrimination.

In the time of the Romans, Panthers appear to have been very numerous, and at present the species is said to extend from Barbary to the remotest parts of Guinea.

It must be observed, that it is very doubtful whether the Panther has ever yet been represented in any drawing. Temminck is of opinion that all the nominal representations of Panthers are really those of leopards.

The following narrative of an encounter with a Panther, which is copied from the Library of Entertaining Knowledge, will abundantly prove the formidable nature of the Panther, even when the animal is not of its largest size.

"I was at Jaffna, at the northern extremity of the island of Ceylon, in the beginning of the year 1819 (says the writer,) when, one morning, my servant called me an hour or two before my usual time, with "Master, master! people sent for master's dogs—tiger in the town!" Now, my dogs chanced to be some very degenerate specimens of a fine species, called the

Poligar dog, which I should designate as a sort of wiry haired greyhound, without scent. I kept them to hunt jackals; but tigers are very different things: by the way, there are no real tigers in Ceylon; but leopards and Panthers are always called so, and by ourselves as well as by the natives. This turned out to be a Panther. My gun chanced not to be put together; and while my servants were doing it, the collector and two medical men, who had recently arrived, in consequence of the cholera morbus having just then reached Ceylon, from the continent, came to my door, the former armed with a fowling-piece, and the two latter with remarkably blunt hog-spears. They insisted upon setting off without waiting for my gun, a proceeding not much to my taste. The tiger (I must continue to call him so) had taken refuge in a hut, the roof of which, as those of Ceylon huts in general, spread to the ground like an umbrella; the only aperture into it was a small door, about four feet high. The collector wanted to get the tiger out at once. I begged to wait for my gun; but no—the fowling-piece (loaded with ball, of course,) and the two hog-spears were quite enough. I got a hedge-stake, and awaited my fate, from very shame. At this moment, to my great delight, there arrived from the fort an English officer, two artillery-men, and a Malay captain; and a pretty figure we should have cut without them, as the event will show. I was now quite ready to attack, and my gun came a minute afterwards. The whole scene which follows took place within an enclosure, about twenty feet square, formed, on three sides, by a strong fence of palmyra leaves, and on the fourth by the hut. At the door of this the two artillery-men planted themselves; and the Malay captain got at the top, to frighten the tiger out, by worrying it—an easy operation, as the huts there are covered with cocoa-nut leaves. One of the artillery-men wanted to go in to the tiger, but we would not suffer it. At last the beast sprang; this man received him on his bayonet, which he thrust apparently down his throat, firing his piece at the same moment. The bayonet broke off short, leaving less than three inches on the musket; the rest remained in the animal, but was invisible to us: the shot probably went through his cheek, for it certainly did not seriously injure him,

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as he instantly rose upon his legs, with a loud roar, and placed his paws upon the soldier's breast. At this moment, the animal appeared to me about to reach the centre of the man's face; but I had scarcely time to observe this, when the tiger, stooping his head, seized the soldier's arm in his mouth, turned him half round staggering, threw him over on his back, and fell upon him. Our dread now was, that if we fired upon the tiger, we might kill the man: for the moment there was a pause, when his comrade attacked the beast exactly in the same manner as the gallant fellow himself had done. He struck his bayonet into his head; the tiger rose at him—he fired; and this time the ball took effect, and in the head. The animal staggered backwards, and we all poured in our fire. He still kicked and writhed; when the gentlemen with the hog-spears advanced, and fixed him, while some natives finished him, by beating him on the head with hedge-stakes. The brave artillery-man was, after all, but slightly hurt: he claimed the skin, which was very cheerfully given to him. There was, however, a cry among the natives that the head should be cut off: it was; and, in so doing, *the knife came directly across the bayonet*. The animal measured scarcely less than four feet from the root of the tail to the muzzle. There was no tradition of a tiger having been in Jaffna before; indeed this one must have either come a distance of almost twenty miles, or have swam across an arm of the sea nearly two in breadth; for Jaffna stands on a peninsula on which there is no jungle of any magnitude."

THE CHETAH.

THIS animal, which is called the Youze in Persia, the Chetah in India, and to which Pennant gave the name of the Hunting Leopard, is a native of Africa and Southern Asia. With the distinguishing characteristics of the cat species, it combines somewhat of the dog. Unlike those of the cat, its claws are only slightly retractile. In size he is intermediate between the leopard and the hound, but has a slenderer body, more elevation in his legs, and a less flat fore-part of the head than the former, while he wants the graceful and lengthened form of head and body by which the latter is distinguished. His fur is not sleek, but has a peculiar crispness. Above the ground colour is a bright yellowish fawn; beneath, it is a pure white; the back and sides are covered with innumerable spots, close to each other, from half an inch to an inch in diameter. The spots are larger, but less closely set, on the back than on the head, sides, and limbs. On the chest and under part of the body they are wanting. The tail is marked with interrupted rings of them, till near the extremity, which is surrounded by three or four complete rings. Along the back of the neck and the anterior part of the spine, is a mane, consisting of longer, crisper, and more upright hairs.

In the east he is used in hunting by the higher classes. Hiding himself as much as possible, he approaches the object, and when he has come sufficiently near to the object, he makes five or six enormous bounds, with incredible velocity, darts on his victim, and instantly strangles him. In his domesticated state, the Chetah is one of the most playful and fond of animals He has not the slightest appearance of the caprice and mischievousness of the cat.

THE LYNX

Is an animal more commonly found in cold than in temperate climates; and is at least very rare in hot ones. Bory St. Vincent, however, assures us that he shot several in Spain. It is abundant in the northern parts of Europe, Asia, and America. The Lynx of the Greeks and Romans was not the animal which now bears that name, but the caracal.

The Lynx, of which the ancients have said, that the sight was so sharp as to penetrate opaque bodies, and of which the urine was made to possess the marvellous property of hardening into a solid substance, a precious stone called *lapis lyncurius*, is an animal which never existed, any more than all the properties attributed to it, but in fable. To the present Lynx, or to the caracal, this imaginary one has no affinity, but in name. We must not, therefore, as the generality of naturalists have hitherto done, attribute to the former, which is a real being, the properties of this imaginary one, the existence of which Pliny himself does not seem posed to believe, since he speaks of it only as an ext ordinary beast, and classes it with the sphynx, the pegasus, and other prodigies, or monsters, the produce of Æthiopia.

Our Lynx possesses not the wonderful quality of seeing through walls; but it has bright eyes, a mild aspect, and, upon the whole, an agreeable and lively appearance. Such, however, is its native ferocity, that it is said to be incapable of being subdued. Its urine produces not precious stones, but like the cat, an animal which it nearly resembles, and of which it retains the manners, and even the cleanliness, it covers it over with earth.

The most beautiful skins of the Lynx are brought from Siberia, as belonging to the *lupus-cervarius;* and from Canada, as belonging to the *felis-cervarius;* because being, like all other animals of the New Continent, smaller than those of the Old World, in Europe they are compared to a wolf in size, and in Canada to a wild cat.

The Lynx has short legs, and is generally about the size of the fox. The ears are erect, and are tipped with a long pencil of black hair. The fur, which is long and thick, is of a pale gray colour, with a reddish tinge, and obscurely marked with small dusky spots on the upper parts of the body. The under parts are white. The skin of the male is more beautifully marked than that of the female. It does not walk or run like the wolf in a progressive motion, but leaps and bounds like the cat. It gains its whole subsistence by devouring other animals; and these it will follow to the very tops of trees. Neither can the wild cat, the martin, the ermine, nor the squirrel, escape its pursuit. It also seizes birds, lies in wait for the stag, the roebuck, and the hare, and with one bound often seizes them by the throat. When in possession of its prey, it first sucks the blood of the animal, and then lays open his head, in order to devour the brains. This done, it generally abandons the victim of its fury, goes in search of fresh prey, and is seldom known to return to the former; a circumstance which has given rise to the vulgar remark, that of all animals the Lynx has the shortest memory. The skin of this animal changes its colour according to the season and the climate. In winter it is in every respect better than it is in summer; and its flesh, like the flesh of all beasts of prey, is not proper to eat.

THE CARACAL, OR SIYA-GUSH.

Though the Caracal resembles the lynx in size, in the formation of the body, and the aspect of the head; and, though like that animal, it seems to have the peculiar, and almost singular characteristic of a stripe of black hair at the extremity of the ears; I do not scruple, nevertheless, from their disagreement in other respects, to treat of them as animals of different species.

The Caracal is not spotted like the lynx; it has hair rougher and shorter, its tail is larger, and of a uniform colour; its snout is more elongated; in appearance it is less mild, and in disposition it is fiercer. The lynx is an inhabitant of the cold, or at most of the temperate regions; the Caracal is only found in the hot countries; and it is as much from their difference in disposition and climate that I have judged them to be of two different species, as from the inspection and comparison of the animals themselves.

The Caracal, which is the lynx of the ancients, is common in Barbary, in Arabia, and in the southern half of Asia, and in all those countries which are inhabited by the lion, the panther, and the leopard; like them it depends on prey for its subsistence; but, unlike them, from its inferior size, its inferior strength, to procure that prey it has much difficulty. Hardly, indeed, has it aught to subsist on but what the more potent carnivorous animals are disposed to leave for it. It follows the lion, who, when the immediate cravings of his appetite are gratified, is of a disposition altogether unhostile. From the refuse of what this noble animal has devoured, the Caracal frequently enjoys a comfortable meal. When, however, he is left to his own powers for support, he attacks hares, rabbits, and birds; of the latter he is exceedingly fond, and will pursue them with astonishing swiftness to the tops of the tallest trees.

The Caracal is somewhat larger than a fox, and much fiercer and stronger. It has been known to attack, tear in pieces, and destroy in a few minutes, a large dog, who, fighting for his life, defended himself with all his strength. It is very difficult to tame this animal; yet if taken when very young, and afterwards reared with care, some affirm that it may be trained to the chase, to which it is by nature inclined, and in which it is sure to succeed, provided it is not let loose but against such animals as are its inferiors, and unable to resist it. Should it be a service of danger, with every expression of reluctance it declines it. It is stated that in India they make use of this animal to take hares, rabbits, and even large birds, all of which it surprises, and seizes with singular address and facility. It is, however, doubtful whether the Caracal is ever thus employed. In captivity it is extremely sulky, and growls fiercely whenever it is noticed.

THE STRIPED HYÆNA.

So striking, and even so singular are the characteristics of the Hyæna, that it is hardly possible to be deceived by them. It is, perhaps, the only quadruped which has but four toes to either the fore or hind feet; like the badger it has an aperture under the tail, which does not penetrate into the interior parts of the body; its ears are long, straight, and nearly bare; its head is more square and shorter than that of the wolf; its legs, the hind ones especially, are longer; its eyes are placed like those of the dog; the hair and mane are of a brownish gray, with transverse dark brown or blackish bands on the body, which stripes become oblique on the flanks and the legs. The coat is of two sorts; fur or wool, in small quantity, and long, stiff, and silky hair. Its height varies from nineteen to twenty-five inches, and its usual length, from the muzzle to the tail, is three feet three inches.

The Striped Hyæna is a native of Barbary, Egypt, Abyssinia, Nubia, Syria, Persia, and the East Indies. It generally resides in the caverns of mountains, in the clefts of rocks, or in dens, which it has formed for itself under the earth. It lives by depredation, like the wolf; but it is a stronger animal, and seemingly more daring. It sometimes attacks man, carries off cattle, follows the flocks, breaks open the sheep-cotes by night, and ravages with a voracity insatiable. By night also its eyes shine; and it is maintained that it sees better than in the day. If we may credit all the naturalists who have treated of this animal, its cry is very peculiar, beginning with something like the moaning of a human being, and ending in a sound which resembles the sobs or retchings of a man in a violent fit of vomiting; but, according to Kæmpfer, who was an ear-witness of the fact, it sounds like the lowing of a calf. When at a loss for other prey, it scrapes up the earth with its feet, and devours the carcasses, both of animals and men, which, in the countries that it inhabits, are interred promiscuously in the fields.

Of few animals, have so many absurd stories been told as of that we are now treating of. The ancients have gravely written, that the Hyæna could become male and female alternately. It plainly appears, however, that the circumstance which gave rise to this fable, is, the opening in the form of a cleft, which both the male and the female have independently of the parts destined for the purposes of generation. It has, moreover been affirmed, that the neck consisted of but one jointless bone, which bone was of great efficacy in magical invocations; that this creature could imitate the human voice; that it remembered the names of the shepherds, called to them, charmed them, rendered them motionless; that, at the same time, it gave chase to the shepherdesses; caused them to forget their flocks, to be distracted with love, &c. All these things might surely happen without the intervention of a Hyæna; and I conclude this article, in order to avoid the reproach which is due to Pliny, of seeming to take a pleasure in compiling and publishing fables.

THE SPOTTED HYÆNA.

This animal is a native of Southern Africa, and abounds in the neighbourhood of the Cape of Good Hope, where it is called the Tiger Wolf. It is somewhat inferior in size to the striped Hyæna, but, in its wild state has the same manners and propensities. Its short muzzle is less abruptly truncated, and its ears, short and broad in form, are of a nearly quadrilateral figure. The general colour of the hide is a dirty yellow, or yellowish brown, and the whole body is cove with spots of a blackish brown, excepting the un part of the belly and of the breast, the inner surface the limbs and the head. The muzzle is black, and the tail covered with long bushy hair of a blackish brown. Like the striped Hyæna, the spotted species has jaws of enormous strength, with which it easily breaks to pieces the hardest bones.

It is a common but erroneous idea, that the Hya is wholly savage and untameable. B [illegible] been tamed, and instances are recorde [illegible] di[illegible]s having manifested all the attachment of a dog. The Striped Hyæna has recently been domesticated in the Cape territory, and is considered one of the best hunters after game, and as faithful and diligent as any of the common domestic dogs. The truth is, that the Hyæna has a very natural aversion to close confinement, and when exhibited, as he generally is, in a narrow cage, he is miserable, and consequently irritable. In a man, similarly situated, the expression of anger would be praised as a generous hatred of slavery.

The Hyæna was undoubtedly once an inhabitant not only of the European continent, but also of the British islands. His bones have been found in various parts of England and Wales, and particularly in a cave at Kirby Moorside, in Yorkshire. That cave, which was evidently the abode of numerous Hyænas, likewise contains bones of the elephant, the rhinoceros, the hippopotamus, the horse, the ox, the bear, various kinds of deer, the fox, the water-rat, and several birds.

THE CIVET.

The generality of naturalists have been of opinion, that there is only one species of animals that furnish the perfume known by the name of *civet*. Two animals that furnish it, however, are easily distinguishable.

To the first of these animals I have appropriated its original name of *Civet;* and to the second, for the sake of distinction, I have given that of *zibet*.

The latter animal differs from the Civet, in having a body longer and less thick, a snout flatter, more slender and somewhat concave at the upper part; its hair is much shorter and softer; it has no mane, no black under the eyes, or upon the cheeks. All these characteristics are peculiar to, and very remarkable in, the Civet. Some travellers had already suspected that there were two species of Civets; but no person had distinguished them with sufficient accuracy to describe them.

These animals have been called *Musk Cats*, or Civet Cats; yet they are not of the cat species; which, however, they resemble in some zoological points, and in their activity, and their predatory, sanguinary, and nocturnal habits. They somewhat resemble the fox, especially in the head. Their coat is diversified with stripes and spots; a circumstance which has occasioned them to be mistaken for small panthers, by persons who had only seen them at a distance. In every other respect, however, they differ from the panther.

The Civet is from two to three feet in length, stands from ten to twelve inches high, and has a tail half the length of its body. The hair is long, and the ground colour of it is a brownish gray, interspersed with numerous transverse interrupted bands or irregular spots of black. Along the centre of the back, from between the shoulders to the end of the tail, is a kind of mane, which can be erected or depressed as the animal pleases, and which is formed of black hairs, longer than those of the body. The sides of the neck and the upper lip are nearly white. The legs and the greater part of the tail are perfectly black; there is a large black patch round each eye, which passes thence to the corner of the mouth; and two or three bands of the same colour stretch obliquely from the base of the ears towards the shoulder and neck, the latter of which is marked with a black patch.

The perfume of the Civet is very strong, and that of the zibet is so to an excess. This humour is found in the opening which each of these animals has in the neighbourhood of the genitals; and though the odour is so strong, it is yet agreeable, even when it issues from the body of the animal. The perfume of the Civet we must not confound with musk, which is a sanguineous humour obtained from an animal altogether different from either the Civet or the zibet.

The Civets, though natives of the hottest climates of Africa and of Asia, are yet capable of living in temper ate, and even in cold countries, provided they are carefully defended from the injuries of the air, and provided with delicate and esculent food. In Holland, where no small emolument is derived from their perfume, they are frequently reared. The perfume of Amsterdam is esteemed preferable to that which is brought from the Levant, or the Indies, which is generally less genuine. That which is imported from Guinea would be the best of any, were it not that the Negroes, as well as the Indians and the people of the Levant, adulterate it with mixtures of laudanum, storax, and other balsamic and odorous drugs.

Those who breed these animals for the sake of their perfume, put them into a long and narrow sort of box, in which they cannot turn. This box the person who is employed to collect the perfume opens behind, for this purpose twice or thrice a week; and dragging the animal which is confined in it backward by the tail, he keeps it in this position by a bar before. This done, he takes out the civet with a small spoon, carefully scraping with it, all the while, the interior coats of the pouch. The perfume thus obtained is put into a vessel; and every care is taken to keep it closely shut.

The quantity which a single animal will afford depends greatly upon its appetite, and the quality of its nourishment. It yields more in proportion as it is more delicately and abundantly fed. Raw flesh hashed small, eggs, rice, small animals, birds, young fowls, and particularly fish, are the food in which the Civet most delights.

As to the rest, the Civet is a wild, fierce animal, and, though sometimes tamed, is yet never thoroughly familiar. Its teeth are strong and sharp; but its claws are feeble and blunt. It is light and active, and lives by prey, pursuing birds, and other small animals, which it is able to overcome. It generally attacks at night, and by surprise. They are sometimes seen stealing into yards and outhouses, like the fox, in order to carry off poultry. Their eyes shine in the night; and it is very probable that they see better by night than by day. When they fail of animal food, they are found to subsist upon roots and fruits. They very seldom drink; nor do they ever inhabit humid ground; but in burning sands, and in arid mountains, they cheerfully remain.

THE JAVANESE CIVET

Differs considerably from the common Civet. The body narrow, compressed, and higher behind than before, is from fifteen to eighteen inches long. The back is strongly arched. The muzzle is narrow and tapering; the ears short and rounded; the profile forms a perfectly straight line; the tail, tapering gradually to the tip, is as long as the body, and is marked with eight or nine broad black rings, which alternate with as many of a grayish hue. A much lighter gray than that of the Civet composes the ground colour; there is a broad longitudinal dorsal line of black, and on each side two or three narrower black lines, consisting of confluent spots. Over the rest of the body these spots are thickly but rather irregularly scattered, so as to constitute a series of flexuous dotted lines. The side of the neck above is occupied by a deep longitudinal black line, and below, there is a second, which is more obliquely placed. The head is grayish, and has no spots; and the legs are externally black.

The specimens which are in the Tower deposit large quantities of civet. They are fed on a mixture of animal and vegetable food, and are extremely spiteful and savage.

THE GENET

Is an animal smaller than the civet. It has a long body, short legs, a sharp snout, and a slender head. Its fur, which is exceedingly smooth and soft, is of an ash colour, glossy, and marked with black stripes, which are separate upon the sides, but which unite upon the back. It has also upon the neck a kind of mane, or longish hair, which forms a black streak from the head to the tail, which last is as long as the body, and is marked with seven or eight rings, from the insertion to the tip, which are alternately black and white.

The Genet has under the tail, and in the very same place with the civets, an opening, or pouch, in which is separated a kind of perfume resembling civet, but less strong, and apt sooner to evaporate It is an animal somewhat larger than the martin. which it strongly resembles, not only in the form of the body, but also in disposition and habit, and from which it seems chiefly to differ in being more easily tamed. It is a native of Spain, Africa, and the south of Asia.

THE PARADOXURUS

APPROACHES closely to the genets and civets in its general form and habits; so closely, indeed, that Buffon has classed it with the former, under the name of Genette of France. In its teeth, toes, and nails, and the retractile power of the latter, it is nearly similar to them; but it is a plantigrade animal, has no secretory pouch, and the tail, which is as long as the body, and is flattened above and below, has one great singularity; namely, that the animal is able to roll it up into a spire, commencing from above downwards, even to the very base.

The Paradoxurus Typus is a native of the East Indies and the Oriental Archipelago. Marsden calls it the Musang, and the Javanese give it the name of Luwach. Its length, including the tail, is about three feet. Grayish black, with a tinge of yellow, is its general colour. It has a broad dorsal black line, and two or three narrower indistinct black lines on the sides. The under jaws, the legs, and the major part of the tail are also black. Under and above each eye is a white spot.

Little is known of its habits in a state of liberty. As a captive it is sullen, irascible, and unsusceptible of affection.

THE PREHENSILE PARADOXURUS.

THIS animal, a native of Bengal, has its fur of a greenish yellow. The dorsal line, the end of the tail, and the paws are black. Near the back there are two lines of lengthened black spots, and on each side many small orbicular spots.

THE ONDATRA.

THE ONDATRA, and the DESMAN, are two animals which must not be confounded, though they have both been denominated *Musk Rats*, and though they have a few common characteristics.

The **Ondatra**, or **Musk Rat** of Canada, differs from the desman, in having its toes all separated from each other, in having eyes very conspicuous, and a snout very short; whereas of the **Desman**, or **Musk Rat** of Muscovy, the toes of the hind feet are united by a membrane. The tail of both is flat; and not only in this circumstance, but in a number of essential characteristics, they differ from the pilori, or musk rat of the Antilles.

The Ondatra is of the size of a small rabbit, and of the form of a rat. Its head is short, and similar to that of the water rat; its hair is soft and glossy, with a very thick down underneath, nearly like that of the beaver; its tail is long, and though of a different form, being flattened laterally, it is covered nevertheless with little scales, in the same manner as those of other rats.

Its ears are very short, but not uncovered, like those of the domestic rat; being furnished with hair, both outwardly and inwardly.

The striking singularities which have been remarked in the Ondatra, are, first, the force and great expansion of the muscles of the skin, which enables the animal, by contracting its skin, to compress its body, and reduce it to a smaller size; secondly, the suppleness of the false ribs, which permits a contraction of the body so considerable, that the musk rat is known to obtain an easy entrance into holes too narrow for the admission of animals much smaller than itself; thirdly, the manner in which the female voids her urine, the urethra not terminating as in other quadrupeds, but at a hairy eminence situated over the os pubis; fourthly, the testes, which, as in other rats, are situated on each side of the anus, become prodigiously large while the ardour lasts for continuing the species; and lastly, we learn, that the vessels which contain the musk or perfume of this animal, under the form of a milky humour, and which adjoin to the parts of generation, undergo the same changes; that, during the rutting season, they enlarge and swell to a very great degree; that then the perfume is exceedingly strong, and sensibly to be distinguished at a considerable distance; but that, at the expiration of this period, they become wrinkled, they decay, and are at length totally effaced. The change in the bags which contain the perfume is effected more quickly, as well as more completely, than that of the parts of generation. They are common to both sexes, and contain a very copious milky substance, while the animals are actually in heat.

As the Ondatra belongs to the same country as the beaver; as, like that animal, it is fond of water; and as, though smaller, it has yet nearly the same figure, the same colour, the same kind of hair, they have been often compared with each other.

In disposition and instinct, also, these animals bear a considerable resemblance to each other. Like the beavers, the Ondatras live in society during the winter. They form little dwellings, about two feet and a half, and sometimes more, in diameter; and in these there is often found an association of several families. To such habitations they do not resort in order to sleep for five or six months, like the marmots; their only object is, to obtain from them a shelter from the inclemency of the weather. They are of a round form, and are covered with a kind of dome about a foot thick The materials of which they are composed are rushes and certain herbs interwoven together, and consolidated with some clay, which they previously prepare for that purpose with their feet.

These animals breed once a year, and generally produce five or six at a time. So strong are their fore teeth, and so excellently calculated for gnawing, that when one of them is shut up in a box, it presently makes a hole to escape through, let the wood be ever so hard.

These animals are little inclined to ferocity, and, when taken young, are easily tamed. In the very early period of life they are also, which might not be expected, exceedingly handsome; for then the long and almost uncovered tail, which renders their figure very disagreeable afterwards, is very short. They play with all the innocence and sprightliness of young cats; they never bite, and with ease might be reared, were it not for the circumstance of their noxious smell

THE DESMAN.

This animal, a native of **Lapland** and **Russia**, is about the size of a common rat: it has a long and slender nose; no external ears; and very small eyes: the tail is compressed sideways, and its hind feet are webbed: it is of a dusky colour; the belly is a light ash. It frequents the banks of rivers, where it feeds on small fishes; and, in its turn, is often devoured by pikes and other fish, to which it communicates so powerful a musky flavour as renders them exceedingly unpleasant to the taste. A kind of musk, much resembling the genuine sort, is extracted from its tail. The skin of the Desman is frequently laid among clothes to preserve them from moths.

CHAPTER XV.

Of the Peccary, or Mexican Hog—Of the Ternate Bat—The Spectre—The Flying Squirrel—The Hooded Squirrel—The Squirrel Petaurus—The Gray Squirrel—The Ground Squirrel—The Palm Squirrel, and those of Barbary, &c.—The Ant-eaters—The Short and Long-tailed Manis—The Armadillo—The Spotted Cavy—The Opossum—The Marmose—The Cayopolin—The Flying Opossum.

THE PECCARY, OR MEXICAN HOG.

Among the animals of the New World, we meet with few species more numerous or more remarkable than that of the Peccary, or Mexican Hog. At the first glance, this animal resembles our wild boar, or rather the hog of Siam, which, like our domestic hog, as we have already observed, is nothing more than a variety of the wild boar, or wild hog; and for this reason it has been called the boar or hog of America. The Peccary, however, is of a distinct species, and differs from the hog in a number of characteristics, both

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GUINEA PIG. P. 282.

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external and internal. Its head is shorter and broader; it has only four incisor teeth in the upper jaw, instead of six; it has only three instead of six toes on the hind feet; its legs are slenderer; in the stomach and intestines there is a difference of conformation; the tail is extremely short, remarkably flat, and completely pendulous; and its bristles are much stronger than those of the wild boar: and, lastly, it has, upon that part of the back which borders upon the buttocks, an opening from which there is discharged an ichorous humour of a very disagreeable smell. The Peccary is the only animal which has an opening in this region of the body. In the civets, the badger, and the genet, the reservoir for the perfume is situated beneath the parts of generation; and in the musk animals we find it under the belly.

The Peccary may be rendered a domestic animal, like the hog, and has pretty nearly the same habits and natural inclinations. It feeds upon the same aliments; and its flesh, though more dry and lean than that of a hog, is not unpalatable. The female, however, breeds only once a year, and has but two young ones at a birth.

These animals are extremely numerous in all the parts of South America. There are two species: the Collared Peccary, and the White-lipped Peccary. The former is not a migratory animal, but usually lives in the forest where it was produced, and is generally met with in pairs or in small families. It is the smallest of the two species, seldom measuring three feet in length, or weighing more than fifty pounds. Its general colour is a yellowish gray, with the exception of the legs, which are nearly black; and it has a somewhat erectile mane on the back of the neck, composed of a row of long black bristles.

The White-lipped Peccary is much larger than the other species, as it not unfrequently reaches a length of three feet and a half, and a weight of a hundred pounds. It is thicker and stouter in its proportions, has a longer and thicker mane, and has less of the grayish tinge. "Unlike the former species, the White-lipped Peccaries," says the author of The Gardens and Menagerie of the Zoological Society, "congregate in numerous bands, sometimes amounting, it is said, to more than a thousand individuals of all ages. Thus united, they frequently traverse extensive districts, the whole troop occupying an extent of a league in length, and directed in their march, if the accounts of the natives are to be credited, by a leader, who takes his station at the head of the foremost rank. Should they be impeded in their progress by a river, the chief stops for a moment, and then plunges boldly into the stream, and is followed by all the rest of the troop. The breadth of the river or the rapidity of the current appear to be but trifling obstacles in their way, and to be overcome with the greatest facility. On reaching the opposite bank they proceed directly on their course, and continue their march even through the plantations which, unfortunately for the owners, may happen to lie in their way; and which they sometimes completely devastate by rooting in the ground for their favourite food, or devouring such fruits as they find there. If they meet with any thing unusual on their way, they make a terrific clattering with their teeth, and stop and examine the object of their alarm. When they have ascertained that there is no danger, they continue their route without further delay; but if a huntsman should venture to attack them when they are thus assembled in large numbers, he is sure to be surrounded by multitudes and torn to pieces by their tusks, if he is so unwise as to neglect his only chance of escape, which consists in climbing a tree, and thus getting fairly out of their reach. The smaller bands are by no means equally courageous, and always take to flight at the first attack.

"M. Sonnini relates that he was often, in the course of his travels in Guiana, surrounded by a troop of Peccaries infuriated with the havoc made by the muskets of himself and his companions. Mounted upon a tree, he was enabled to observe their motions, and to notice the manner in which they encouraged, by their grunts and by the rubbing of their snouts together, those among them who were injured by the shots which were poured on them from above. With erected bristles, and eyes sparkling with rage, they still maintained their ground; and it was sometimes only after two or three hours' incessant firing that they were at last compelled to quit the field of battle, and to leave the bodies of the dead to the mercy of the conquerors. These days of victory over the Peccaries, he adds, are always days of abundance for the traveller in those immense forests, who has no other resource except the chase. An enormous gridiron is immediately constructed with sticks fixed in the earth, and three feet in height, over which a quantity of small branches are placed in a transverse direction. On these the Peccaries are deposited, after being cut in pieces, and are cooked by a slow fire, which is kept up during the whole night."

In its native country, the Peccary is rather fond of the mountainous parts, than of the low and level grounds; it seems to delight neither in the marshes nor the mud, like our hogs; it keeps among the woods, where it subsists upon wild fruits, roots, and vegetables; it is also an unceasing enemy to the lizard, the toad, and all the serpent kinds with which the uncultivated forests of the New Continent abound. As soon as it perceives a serpent or a viper, it at once seizes it with its fore hoofs and teeth, skins it in an instant, and devours the flesh. They commit great havoc among the sugar-canes, maize, manihot, and potato crops.

The young ones follow the dam, and do not separate from her till they have come to perfection. If taken at first, they are very easily tamed, and soon lose all their natural ferocity; they, however, never display any remarkable signs of docility. They only continue to do no mischief; and they may be permitted to run tame, without apprehending any dangerous consequences. They seldom stray far from home; they return of themselves to the sty, and do not quarrel among each other, except when they happen to be fed in common. When enraged, they draw their breath with great force, and their bristles point upward; nor, on such occasions, can these be said so much to resemble the bristles of the wild boar as the sharp armour of the hedgehog.

THE ROUSSETTE, GREAT TERNATE BAT, OR VAMPYRE BAT;[*] THE ROUGETTE, OR LESSER TERNATE BAT; AND THE SPECTRE BAT.

THE Roussette and the Rougette seem to form two distinct species, which, however, are so full of resemblances to each other, that they ought not to be presented asunder. The latter differs from the former solely in the size of the body and the colours of the hair. The Roussette, whose hair is of a reddish brown, is in length nine inches from the tip of the nose to the insertion of the tail; and in breadth three or even four feet, when the membranes, which serve it for wings, are fully extended. The Rougette, whose hair is of a reddish ash-colour, is hardly more than five inches and a half in length, and two feet in breadth; and its neck is half encircled with a stripe of hair of a lively red, intermixed with orange-colour, of which we perceive no vestige on the neck of the Roussette. They both belong nearly to the same hot climates of the Old Continent. We meet with them in Madagascar, in the island of Bourbon, in Ternate, in the Philippine and other islands of the Indian Archipelago, where, indeed, they seem to be more common than in the neighbouring continents.

The smell of these creatures is ranker than that of a fox, yet the Indians consider them as delicious food, and the French who reside in the Isle of Bourbon even boil them in their soup to give it a relish! The hair of the Vampyre Bat, interwoven with threads of cyperus squamosus, is used by the natives of New Caledonia for making ropes and the tassels of their clubs.

In the hotter countries of the New World, and in some of the islands of the Pacific Ocean, we likewise meet with another flying quadruped, of which we know not the American name, but to which I will affix the denomination of Spectre, because it sucks the blood of men, and of animals, while they are asleep, without causing even sufficient pain to awake them This

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[*] The name of Vampyre Bat was also given to the Spectre Bat by Buffon, but is now appropriated to the Roussette. The two species do not differ materially in their habits.

American animal is of a species different from those of the Roussette and the Rougette, which are both to be found solely in Africa, and in the southern parts of Asia.

The Spectre is smaller than the Rougette, which is itself smaller than the Roussette. The former, when it flies, seems to be of the size of the pigeon; the second, of the size of a raven; and the third, of the size of a large hen. Of both the Roussette and the Rougette the head is tolerably well shaped; the ears are short, and the nose is very round, and nearly in form like that of a dog. Of the Spectre, on the contrary, the nose is more elongated; the aspect is as hideous as that of the ugliest Bats; the head is unshapely, and the ears large, very open, and very straight; its nose is disfigured; its nostrils resemble a funnel, and have a membrane at the top, which rises up in the form of a sharp horn, or cock's comb, and greatly heightens the deformity of its face.

There is no doubt, therefore, but that the species of the Spectre is different from those of the Roussette and the Rougette. It is an animal not less mischievous than it is deformed; it is the pest of man, the torment and destruction of animals. In confirmation of this truth, a more authentic testimony cannot be produced than that of M. de la Condamine. "The Bats," says he, "which suck the blood of horses, of mules, and even of men, when they do not guard against it by sleeping under the shelter of a pavilion, are a scourge common to most of the hot countries of America. Of these there are some of a monstrous size. At Borja, and several other places, they have entirely destroyed the large cattle which the missionaries had brought thither, and which had begun to multiply."

The Roussette and Rougette are larger, stronger, and perhaps yet more mischievous than the Spectre; but it is by open force, and in the day as well as in the night, that they commit hostilities. Fowls and small animals are the objects of their destructive fury; they even attack men, and bite their faces most cruelly.

All these Bats are animals carnivorous, voracious, and possessed of an appetite for every thing that offers. In a dearth of flesh or fish, they feed on vegetables and fruits of every kind. As they are fond of the juice of the palm tree, so it is easy to take them by placing in the neighbourhood of their retreat a few vessels filled with palm-tree water, or any other fermented liquor, with which they intoxicate themselves. They fasten to, and suspend themselves from, trees with their claws. They are usually seen in troops, and more so by night than by day; places which are much frequented they shun; and their favourite residence is in the deserted parts of islands.

I have frequently thought it worth while to examine how it is possible that these animals should suck the blood of a person asleep, without causing, at the same time, a pain so sensible as to awake him. Were they to cut the flesh with their teeth or with their claws, the pain of the bite would effectually rouse any of the human species, however soundly asleep. With their tongue only, then, it is possible for them to make such minute apertures in the skin, as to imbibe the blood through them, and to open the veins without causing an acute pain.

The tongue of the Spectre I have not had an opportunity to observe; but that of several Roussettes, which Mr. Daubenton has attentively examined, seems to indicate the possibility of the fact. It is sharp, and full of prickles directed backward; and it appears that these prickles, or points, from their exceeding minuteness, may be insinuated into the pores of the skin, may enlarge them, and may penetrate them so deep, as to command a flow of the blood by the continued suction of the tongue. But we can only conjecture upon a fact of which all the circumstances are imperfectly known to us, and of which some are perhaps exaggerated, or erroneously related, by the writers who have transmitted them to us.

Captain Stedman, while sleeping in the open air in Surinam, was attacked by one of the Spectre Bats. On awaking, about four o'clock in the morning, he was extremely alarmed to find himself weltering in congealed blood, and without feeling any pain. Having started up, he ran to the surgeon, with a firebrand in his hand, and all over besmeared with gore. The cause of his alarm was, however, soon explained. After he had applied some tobacco ashes to the wound, and had washed the gore from himself and his hammock, he examined the place where he had lain, and observed several small heaps of congealed blood upon the ground; on examining which, the surgeon judged that he had lost at least twelve or fourteen ounces. Captain Stedman says, that these animals, knowing by instinct that the person they intend to attack is in a sound slumber, they generally alight near the feet, where, while the creature continues fanning with his enormous wings, which keeps the person cool, he bites a piece out of the tip of the great toe, so very small that the head of a pin could scarcely be received into the wound, which is consequently not painful. Yet, through this orifice, he sucks the blood until he is obliged to disgorge. He then begins again, and thus continues sucking and disgorging till he is scarcely able to fly; and the sufferer has often been known to sleep from time into eternity. The Spectre Bats generally bite in the ear, but always in places where the blood will flow spontaneously.

THE FLYING SQUIRREL

Is more common in America than in Europe, where he is seldom seen, except in Russia, Norway, and Lapland. The American species uses the same food, and forms the same hoards, as the common Squirrel; but the Norwegian feeds principally on the tender branches of the beech and pine trees. The latter species differs from the former principally in having its tail full of hair, rounded at the end, and its body being a fine gray on the upper part, and white on the lower; while the American has a tail tapering to a point, and is of a cinereous brown on the back, and white tinged with yellow on the belly. This little animal dwells upon trees, like the Squirrel; he goes from branch to branch; and when he leaps upon another tree, his skin, which hangs loose on both sides of his body, is stretched forward by his fore legs, and backward by the hind legs, and increases the surface of his body without adding to its weight, and consequently retards his fall; so that this animal reaches, in one leap, a great distance. This motion is not like the flight of a bird, neither like the fluttering of a bat; both which motions are performed by striking the air with repeated vibrations. It is one single leap, caused by the first impulse, the motion of which is only prolonged, and lasts longer, as the body of the animal, presenting to the air greater surface, finds a greater resistance, and falls more slowly.

The Flying Squirrel is easily tamed; but it often flies; and he must be kept in a cage, or secured with a small chain. He feeds upon bread, fruit, seeds; he is remarkably fond of the buds and shoots of the birch and pine trees. He does not seek after nuts and almonds like the Squirrel. He makes a bed of leaves, in which he buries himself, and upon which he lies in the daytime, and leaves it in the night, or when pressed by hunger. As he has little agility, he becomes easily the prey of martins, and other animals which climb up the trees; so that the species is not greatly multiplied, although they have commonly three or four young at a time.

In Virginia there is another of this species, called the HOODED SQUIRREL; the lateral membrane begins at the chin and ears, where it forms a kind of hood, and extends, like that of the former, from the fore to the hind legs: its body is of a reddish colour above, and of a yellowish ash beneath. It is a species, as yet, but little known.

THE SQUIRREL PETAURUS.

THIS animal which is of the Petaurus genus, is an inhabitant of New South Wales, and is said to be abundant at the foot of the Blue Mountains. It was first known in England under the name of the Norfolk Island Flying Squirrel. It is nearly of the size of the common Squirrel, with a tail somewhat longer than its body. Above, its colour is of a delicate gray, rather darker on the head; and beneath, it is white. Along the back, from the point of the nose towards the tail, there is a black line, and a similar line bounds the lateral folds of the skin, in front and on the sides. Its fur is of the softest and most beautiful nature. Like most of the New Holland animals, it has an abdominal pouch. During the day it nestles in hollow trees, but as the night advances it grows lively, and by means of its lateral expansions springs from bough to bough, half leaping and half flying. Leaves and insects are its food. There seems reason to believe that, in its flight-like leaps as they have been aptly called, the animal has the power of changing its course. One of them, on board ship, sprung from the mast-head at the moment when the vessel gave a heavy lurch to the side opposite to that in which the Petaurus had directed its leap; yet the animal reached the deck in safety; which it would not have accomplished had it not been able to alter its original direction.

THE GRAY SQUIRREL

Is found in the northern part of both continents. He is in shape like a common squirrel; the outward difference consists in his size; he is larger than Squirrels generally are; the colour of his hair is not red, but light, or deep gray; and his ears are not so hairy towards the extremity, as those of our Squirrels. Many authors think the species is different in Europe and America; that the Gray Squirrels of Europe are of the common kind, and that they change their colour, according to the season, in the northern climates. Without denying absolutely this assertion, which does not seem sufficiently proved, we look upon the Gray Squirrel of Europe and America as the same animal, and as a distinct species, separated from that of common Squirrels, who are found in the northern parts of both continents, being of the same size and of the same colour; that is of a red, more or less bright, according to the temperature of the country.

The Gray Squirrel migrates to immense distances. It crosses rivers on a piece of pine bark, and uses its tail as a sail; but the little navigators are often wrecked on these voyages. Its colour is a pale gray, except under the body, and the inside of the limbs, which are white. In Sweden and other cold countries, it changes its colour in the winter. It makes its nest in hollow trees with moss, straw, wool, &c. For its winter sustenance it lays up stores of provision in holes made in the ground, and in amassing these it commits great havoc in the plantations, particularly among those of maize. These hoards are often destroyed by swine. It is disliked by the sportsman as much as by the farmer, in consequence of its making a chattering noise on his approach, by which the alarm is given to the game. Its fur is very valuable, and is imported under the name of petit-gris.

THE GROUND SQUIRREL.

The Ground or Striped Squirrel is very numerous in the forests of North America and northern Asia. It burrows in the ground, and makes two entrances to its habitation; that if one should be stopped up, it may have access by the other. In autumn, however, when the ground is covered with leaves, and it is warmly pursued, it has often some difficulty in discovering the entrance to its haunt, and it then displays striking signs of consternation. It is only on such occasions that it will take refuge in trees. Its hole is formed with great skill, having several branches from the principal passage, each of which is terminated by a store-house, in which its winter food is deposited: in one is contained acorns, in another nuts, in a third maize, and in a fourth chestnuts, which are its favourite food, and of which it sometimes collects not less than two hats full. In Siberia, ten or fifteen pounds weight of the kernels of the stone pine have been taken out of one of these hoards.

During harvest they fill their mouths so full with corn, that their cheeks are quite distended; and in this manner carry it to their concealed store. They give great preference to certain kinds of food; and if, after filling their mouths with rye, they chance to meet with wheat, they discharge the one, that they may secure the other. These animals seldom stir out during the winter, nor so long as their provisions last: when those fail, they sometimes work their way into places where apples are laid up, or into barns where maize is stored, and make great havoc.

This animal is marked with a stripe of black, which runs along the ridge of the back; and on each side a yellow stripe, bordered with black: its head, body, and tail, are of a reddish brown; breast and belly white; its nose and feet of a pale red colour: its eyes full and lively. It is very wild, bites severely, and is tamed with difficulty. Its skin is of but trifling value, and is chiefly sold to the Chinese.

THE PALM SQUIRREL, AND THOSE OF BARBARY AND SWITZERLAND.

The Palm Squirrel, which is a native of the south-eastern portion of Asia and its neighbouring islands, is as large as a rat, or a small squirrel; he lives upon the Palm trees, from which he takes his name: some call him the Palmist Rat, and others the Palm-tree Squirrel; we shall call him Palmist. His head is very near of the same form as that of the short-tailed field mouse, and covered with rough hair; his long tail does not lie on the ground, like that of the rat: he carries it erect vertically, without however laying it on his body, as the Squirrel; it is covered with hair longer than that of his body, but much shorter than the hair of the Squirrel's tail: his back is variegated with white and brown stripes, which distinguish the Palmist from all other animals, except the Squirrel of Barbary and Switzerland.

The name of this animal is derived from their being often seen on palm trees; those trees being always found near human habitations in the East. He is a familiar creature, and will enter the houses, and pick up the crumbs that drop from the table. In the orchards, however, he commits woful havoc. His abode is in the roofs of houses and the cavities of old walls. The species is common in India.

As for the Squirrel of Barbary, as he is of the same size, and very near the same form as the Palmist, one should be inclined to think, that they are both of the same species, with some variety; yet there is still reason to believe them different animals. The Squirrel of Barbary has the head and forehead more crooked, the ears longer, the tail more bushy than the Palmist; he is more like a rat than a Squirrel. The Squirrel of Barbary has four white stripes, and the Palmist has no more than three: the white stripe is on the Palmist's backbone; on the contrary, that of the Squirrel of Barbary on the same part of his body is brown and red. These animals, indeed, have very nearly the same habits, and are of the same nature as the common Squirrel. They are both of an elegant form; their coat with white stripes is more valuable than that of the Squirrel; their shape is shorter, their body lighter, and their motions quicker. The Palmist, and the Squirrel of Barbary, dwell on trees like the common Squirrel; but the Swiss Squirrel lives upon earth, and, like the field mouse, forms a retreat that the water cannot penetrate; he is also less docile and less gentle than the two others: he bites without mercy (except he is lately tamed:) he is more like a rat, or a field mouse, than a Squirrel, by instinct and nature.

THE TAMANOIR, THE TAMANDUA, AND THE FOURMILLIER, OR ANT-EATER.

South America produces three species of animals, with a long snout, a small mouth, and no teeth; their tongues, of a round form, are remarkably long; with which they catch the ants, which are their principal food. On coming to an ant hill, the animal scratches it up with his claws, and then protrudes his slender tongue, which has the appearance of an exceedingly long earthworm. It is covered with a viscous saliva. To this the ants adhere, and, by retracting it, he swallows thousands of them. He also tears up the nests of wood-lice, and often climbs the trees in pursuit of them, and of the wild bees and their honey. The first of these Ant-eaters is that which the Brazilians call Tamandua Guacu, or Great Tamandua, to whom the French settled in America have given the name of Tamanoir. The English call it the Great Ant-eater. This animal is about four feet in length from the extremity of the snout to the origin of the tail; his head is fourteen or fifteen inches long, his snout stretches out to a great length; his tail, two feet and a half long, is covered with rough hair, which is more than a foot in length; his neck is short; his head narrow; his eyes black and small; his ears round; his tongue thin, more than two feet long, which he folds again in his mouth, after he draws it entirely out. His legs are but one foot high; the fore-legs are a little higher and more slender than those behind; he has round feet; the fore feet are armed with four claws, the two middle ones are the longest; those behind have five claws. The hair of his head and body is black and white; this animal turns his tail up on his back, and covers with it his whole body, when he is inclined to sleep, or wants to shelter himself from the rain or the heat of the sun. The long hair of his tail and of his body is not round in all its extent; it is flat towards the end, and feels like dry grass. He waves his tail frequently and hastily when he is irritated, but it hangs down when he is composed, and he sweeps the way with it as he goes. The Tamanoir walks slowly; a man can easily overtake him in running: his feet seem less calculated to walk than to climb, and to fasten round bodies; and he holds so fast a branch or stick, that it is not possible to snatch either from him.

The second of these animals is that which the Americans call Tamandua. He is much smaller than the Tamanoir; he is not above eighteen inches from the extremities of the snout to the rump: his head is five inches long, his snout crooked, and underneath flat and long; he has a tail ten inches long, without hair at the end; his ears are erect, and about an inch in length; his tongue is round, eight inches long, and placed in a sort of gutter or hollow canal within the lower jaw; his legs are not above four inches in height, his feet are of the same form, and have the same number of claws as the Tamanoir. He climbs up and holds fast a branch, or a stick, like the Tamanoir, and his march is equally slow. He does not cover himself with his tail, which cannot shelter him, being almost bare; the hair of the fore part is shorter than that of the Tamanoir; when he sleeps he hides his head under his neck and his fore legs.

The third of these animals is that which the naturalists of Guiana call Watiriwaou; and the French Fourmillier, or Ant-eater. He is still much smaller than the Tamandua, being not above six or seven inches in length from the extremity of the snout to the tail; his head is two inches long; the snout is not near so long as that of the Tamanoir, or the Tamandua; his tail is seven inches in length, is bent underneath, and bare at the end: his tongue is narrow, long, and flat; his neck is almost bare; the head is large in proportion to the body; his eyes placed low, at a little distance from the corners of the mouth; his ears are small, and hidden by the hair; his legs are but three inches in height; the fore feet have no more than two claws, the outward is much longer than the inward one; the hind feet have four claws; the hair of the body is about nine inches long; he feels smooth, his colour is shining, diversified with red and yellow: his feet are not made to walk, but to climb up, and to take hold of branches of trees, on which he hangs himself by the extremity of his tail.

These three animals, so different in size and proportions of the body, have, nevertheless, many things in common, as to conformation and their natural instinct. All three feed upon ants, and suck honey and other liquid and viscous substances; they gather quickly crumbs of bread and small pieces of meat; they are tamed and domesticated easily; they can subsist a long while without food; they do not swallow all the liquor which they keep in their mouth, one part of it issues out of their nostrils; they commonly sleep in the day time, and change their station in the night; they go so slowly, that a man may overtake them easily whilst running in open ground. The savages eat their flesh, which has, however, an unsavoury taste.

The Tamanoir looks at a distance like a great fox, and for that reason some travellers call him the American fox: he is strong enough to defend himself against a large dog, and even a jaguar; when he is attacked he fights standing on his hind legs, like the bear, and makes use of his fore claws, which are murdering weapons, for his protection; afterwards he lies on his back to use his hind legs, and in this situation he is almost invincible; he fights with obstinacy till the last extremity, and even after he has put his adversary to death, he keeps hold of him a long while. He is covered with long bushy hair, and a very thick skin; besides, his flesh is remarkably hard, and he seldom loses his life in these engagements.

The Tamanoir, the Tamandua, and the Fourmillier, are natives of the hottest climates only of America; they are found in Brazil, in Guiana, and in the country of the Amazons, &c. They do not breed in Canada, nor in the other frozen regions of the New World, and do not belong consequently to the Ancient Continent.

THE PANGOLIN AND PHATAGIN; OR, THE SHORT AND LONG-TAILED MANIS.

THESE animals are commonly known under the name of scaly lizards; but we reject this denomination; 1st, because it is a compound; 2dly, because it is ambiguous, and applied to both species; 3dly, because it is wrongly imagined; these animals being not only of another kind, but even of another class than the lizards, which are oviparous reptiles, while the Pangolin and the Phatagin are viviparous quadrupeds.

All the lizards are wholly covered, even under the belly, with a sleek speckled skin, resembling scales, but the Pangolin and the Phatagin have no scales under their throat, on the breast, or the belly; the Phatagin, like the other quadrupeds, has hair on all these under parts of the body; the Pangolin has nothing but a smooth skin without hair. The scales with which all the other parts of the body of these two animals are clothed and covered, do not stick to the skin; they are only fixed and inherent to it underneath; they are moveable like the prickles of the porcupine. These scales are so large, so hard, and so sharp, that they frighten and discourage all animals of prey; on collision they will strike fire like flint: it is an offensive armour which wounds while it resists.

The most cruel and the most voracious animals, such as the tiger and the panther, make but useless efforts to devour these armed animals; they tread upon them, roll them, but when they attempt to seize them, they are grievously wounded; they can neither terrify them by violence, nor bruise, nor smother them with their weight.

When the Pangolin and the Phatagin contract themselves, they do not take, as the hedgehog, a globular and uniform figure, they form an oblong coat of armour: but their thick and long tail remains outward, and encircles their bodies; this exterior part, by which it seems these animals might otherwise be seized, carries its own defence; it is covered with scales equally hard and sharp with those with which the body is clothed, and as it is convex above, and flat below, in the form of half a pyramid, the sides are covered with square scales folded in a right angle, as thick and as sharp as the others, so that the tail seems to be still more strongly armed than the body, the under parts of which are unprovided with scales.

The Pangolin, or Short-tailed Manis, is larger than the Phatagin, or long-tailed kind; his fore feet are covered with scales, but the Phatagin's feet and part of his fore legs have none, being only clothed with hair. The Pangolin has also larger scales, thicker, more convex, and not so close as those of the Phatagin, which are armed with three sharp points; on the contrary, the scales of the Pangolin are without points, and uniformly sharp. The Phatagin is hairy upon the belly; and the Pangolin has no hair on that part of his body, but between those scales which cover his back some thick and long hair issues like the bristles of a hog, which are not found on the back of the Phatagin.

The Pangolin is from six to eight feet in length, including his tail; the tail is very near as long as the body, though it appears shorter when young; the scales are not then so large nor so thick, and of a pale colour, which is deeper when the ânimal is adult; they acquire such a hardness, that they resist a musket ball. Like the ant-eaters, the Pangolin and the Phatagin live chiefly upon ants; they have also a very long tongue, a narrow mouth, and without apparent teeth: their body and their tail are also very long, and the claws of their feet very near of the same length and the same form, but equal in number. Like the anteater the Pangolin is also toothless, and has a long cylindrical tongue, which it uses in the same manner as that animal to procure the insects on which it subsists. When the Pangolin approaches an ant-hill, it lies down near it, concealing as much as possible the place of its retreat, and stretching out its long tongue among the ants, keeping it for some time immovable. These little creatures, allured by its shining appearance, and the unctuous substance with which it is smeared, instantly gather upon it in great numbers; and when the Pangolin supposes that it has a sufficiency, it quickly withdraws the tongue, and swallows them at once. This operation it repeats till it be satisfied, or till the ants, grown more cautious, will be no longer allured to their destruction. The ant-eaters are found in America; the Pangolin and the Phatagin in the East Indies, and in Africa, where the Negroes call them quogelo: they eat their flesh, which they reckon a delicate, wholesome food; they also use their scales for different purposes. Their mode of killing it is by beating it with clubs. The Pangolin and the Phatagin have nothing forbidding but their figure; they are gentle, harmless, and innocent; they feed upon insects only; they never run fast, and can only escape the pursuit of men by hiding themselves in hollow rocks, or in holes which they dig for themselves; they are two extraordinary species, not numerous, nor very useful: their odd form seems to place them as an intermediate class betwixt the quadrupeds and the reptiles.

THE ARMADILLO.

WHEN a quadruped is mentioned, the very name carries the idea of an animal covered with hair; and yet nature, as if willing to deviate from this characteristic uniformity, very frequently astonishes us by un common productions. The quadruped animals, which we look upon as the first class of living nature, and who are, next to man, the most remarkable beings of this world, are not superior in every thing, nor separated by constant attributes. The first of these characters, which constitutes their name, and which consists in having four feet, is common to lizards, frogs, &c. which, however, differ from the quadrupeds in many other respects, so as to make a separate class from them. The second general property, to produce young alive, is not peculiar to quadrupeds, since it is common with whales and other fishes of that class. And the third attribute, that of being covered with hair, exists not in several species, which cannot be excluded from the class of the quadrupeds, since, this characteristic excepted, they agree with them in all other respects.

THE SIX-BANDED ARMADILLO.

UNDER the general name of Armadillo, we may reckon several species which seem to us really distinct; in all of them the animal is protected by a crust resembling bone; it covers the head the neck, the back, the flanks, the buttocks, and the tail to the very extremity. This crust is covered outwardly by a thin skin, sleek and transparent: the only parts that are not sheltered by this buckler, are the throat, the breast, and the belly, which presents a white grainy skin, like that of a plucked fowl; and, in considering these parts with attention, you will perceive the appearance of scales which are of the same substance as the crust. This crust is, however, not of one piece, like that of the turtle; it consists of several parts, joined to each other by as many membranes, which put this armour in motion. The number of these natural bands does not depend on the age of the animal; for the young Armadillo and the adults have in the same species the same number. Father d'Abbeville has distinguished six species of the Armadillo, but the principal difference between them consists in the number of bands or divisions in the armour of the different species. The Six-banded Armadillo differs from its fellows in being also of a smaller size, not larger than that of a young pig, and in its tail being shorter.

The Armadilloes in general are innocent, harmless animals; if they can penetrate into gardens, they will eat melons, potatoes, pulse, and roots. Though used originally to the hot climates of America, they live in temperate regions: I saw formerly one in Languedoc, which was fed at home, and went every where without doing any damage or mischief; they walk quickly, but they can neither leap, run, nor climb up trees; so they cannot escape by flight: they have then no other resource but to hide themselves in their holes, or if they are at too great a distance from their subterraneous habitations, they contrive to dig one before they are overcome; for the mole is not more expert in digging the ground. They are sometimes caught before they are out of sight, and they make then such a resistance, that the tail is broken without bringing out the body: in order to take them without mutilation, the burrow must be opened, they are then caught without making any resistance: when they find themselves in the hand of their pursuers, they roll themselves up into a ball, and are placed near the fire, to force them to stretch out their coat of mail; which hard as it is, as soon as it is touched by the finger, the animal receives sc quick an impression, that he contracts instantaneously. When they are in deep burrows, the method of forcing them out is to smoke them, or to let water run down the hole: the former process, however, is not always successful, as while his pursuer digs the animal digs also, and so effectually closes up the hole, by throwing up the earth backwards, that the smoke is excluded. Some pretend they remain under ground above three months without venturing out; it is true, that they remain in their holes in the day-time, and never go out but in the night to seek for their subsistence. The Armadillo is hunted with small dogs, who soon overtake him; but he stops before they have reached him, and contracts himself; in this condition he is taken and carried off. If he finds himself on the brink of a precipice, he escapes the dogs and the hunters, by rolling himself up, and letting himself fall down like a ball, without injury or prejudice to his scales.

The Armadillo, says Mr. Waterton, is very common in these (the South American) forests; he burrows in the sand hills like a rabbit. As it often takes a considerable time to dig him out of his hole, it would be a long and laborious business to attack each hole indiscriminately without knowing whether the animal were there or not. To prevent disappointment, the Indians carefully mine the mouth of the hole, and put a short stick down it. Now if, on introducing the stick, a number of moschetoes come out, the Indians know to a certainty that the Armadillo is in it; whenever there are no moschetoes in the hole, there is no Armadillo.

These animals are fat, and very prolific; the female brings forth, as it is reported, four young ones every month, which makes their species very numerous. They are good to eat, and are easily taken with snares laid for them on the banks of rivers, and in the marshy grounds, which they inhabit in preference. It is pretended, that they are not afraid of the bite of the rattlesnake; it is likewise pretended, that they live in peace with these reptiles, which are often found in their holes. The savages apply their scales to different purposes, and make of them baskets, boxes, and other small vessels light and solid. The Armadillo is only found in South America.

THE PACA, OR SPOTTED CAVY,

Is an animal of the New World, who digs a burrow like a rabbit, to which he has been compared, though there is scarcely any likeness between these two animals; he is much larger than the rabbit, and even than the hare; he has a round head, and the snout short; he is fat and bulky, and by the form of his body, he is more like a pig, as well as by grunting, waddling, and the manner of eating; for he does not use, as the rabbit does, his fore feet to carry food to his mouth; but grubs up the earth like the hog, to find his subsistence. The colour of the back is dark brown, or liver-coloured; but is lighter on the sides, which are beautifully marked with lines of white spots, running in parallel directions from its throat to its rump; those on the upper part of the body are perfectly distinct; the belly is white. Its head is large; its ears short and naked; its eyes full, and placed high in its head, near the ears; it has two strong yellow cutting teeth in each jaw; its mouth is small; its upper lip divided; and it has long whiskers on its lips, and on each side of its head, under the ears. Its legs are short, with four toes on the fore, and three on the hind foot; and it has no tail.

These animals inhabit the banks of rivers, and are found in damp and hot places of South America: the flesh is very good to eat, and excessively fat, their skin also is eaten as that of a pig; the natives of Brazil consider the flesh to be a great delicacy; a perpetual war is therefore carried on against these animals. Hunters find it very difficult to take them alive; and when they are surprised in their burrows, which have two openings, they defend themselves, and bite with great rage and inveteracy. When pursued, they take to the water, and escape by diving. If attacked by dogs, it defends itself vigorously. Their skin, though covered with short and rough hair, is valuable, because it is spotted on the sides. These animals bring forth young in abundance: men, and animals of prey, destroy a great quantity of them, and yet the species is still numerous. They are peculiar to South America, and are found nowhere in the Old Continent.

THE OPOSSUM

Is an animal of America, which is easily distinguished from all others by two singular characters: the first is, that the female has under the belly a large cavity, where she receives and suckles her young; the second is, that the male and the female have no claws on the great toe of the hind feet, which are separated from the others, as the thumb in the hand of a man, whilst the toes are armed with crooked claws, as in the feet of other quadrupeds.

The Opossum is not found in the northern parts of the New World; but he does not constantly dwell in the hottest climates. He is found not only in Brazil, Guiana, and Mexico, but also in Florida, Virginia, and other temperate regions of this continent. It produces often, and a great number of young each time. Most authors say, four or five young; others, six or seven. Marcgrave affirms, that he has seen six young living in the bag of the female; they were about two inches in length, they were already very nimble, they went in and out of the bag many times in a day: they are still smaller when they are just brought forth. Some travellers say, that they are not larger than flies when they go out of the uterus into the bag, and stick to the paps: this fact is not so much exaggerated as some people may imagine, for we have seen ourselves in an animal, whose species is like that of the Opossum, young ones sticking to the paps not larger than a bean.

The young Opossums stick to the paps of the mother till they have acquired strength enough, and a sufficient growth to move easily. This fact is not doubtful, nor even particular in this species only. Some authors pretend, that they stick to the paps for several weeks; others say, that they remain in the bag only the first month after they go out of the womb. One may open with facility this bag, observe, count, and even feel the young without disturbing them; they will not leave the pap, which they hold with their mouth, until they are strong enough to walk; then they let themselves fall into the bag, and go out, and seek for their subsistence; they go in again to sleep, to suckle, and to hide themselves when they are terrified, when the mother flies, and carries in it the young: her belly does not seem bigger when she breeds than common, for in the time of the true gestation, it is scarcely perceivable that she is with young.

From the mere inspection of the form of the feet of this animal, it is easy to judge that he walks awkwardly, and seldom runs: a man can overtake him without hastening his steps. He climbs up trees with great facility, hides himself in the leaves to catch birds, or hangs himself by the tail, the extremity of which is muscular, and flexible as the hand, so that he may squeeze, and even incurvate all the bodies he seizes upon: he sometimes remains a long while in this situation, without motion; his body hangs with his head downward, when he silently waits for his prey; at other times, he balances himself to jump from one tree to another like the monkeys with like muscular and flexible tails, which he resembles also in the conformation of the feet. Though he is voracious and even greedy of blood, which he sucks with avidity, he feeds also upon reptiles, insects, sugarcanes, potatoes, roots, and even leaves and bark of trees. He may be fed as a domestic animal; he is neither wild nor ferocious; he is easily tamed, but he creates disgust by his bad smell, stronger and more offensive than that of the fox; his figure is also forbidding; for, independently of his ears, which resemble those of an owl, of his tail, which resembles that of a serpent, and of his mouth, which is cleft to the very eyes, his body appears always very dirty, because his hair is neither smooth nor curled, but tarnished, as if covered with dirt. The bad smell of this animal resides in the skin, for his flesh is eatable. The savages hunt this animal and feed on his flesh heartily. It is so tenacious of life, that, in North Carolina, it has given rise to an adage, that "if a cat has nine lives, an Opossum has nineteen."

The latest and fullest account of the manners and habits of the Opossum tribe is given by Dr. Goodman, an American naturalist. "The Opossum (says he) is very remarkable from other peculiarities, beside those which relate to the continuation of its kind. In the first place, it has a very large number of teeth (no less than fifty), and its hind feet are actually rendered hands, by short, fleshy, and opposable thumbs, which, together with the prominences in the palms of these poster hands, enable the animal to take firm hold of objects which no one would think could be thus grasped. An Opossum can cling by these *feet* hands to a smooth s k handkerchief, or a silk dress, with great security, a d climb up by the same. In like manner he can ascend by a skain of silk, or even a few threads. The slightest projection or doubling, of any material, affords him a certain mean of climbing to any desired height. Another curious and amusing peculiarity is his prehensile tail; by simply curving this at the extremity [illegible] ossum sustains his weight, and depends from [illegible] a tree, or other projecting body, and hanging in full security, gathers fruit, or seizes any prey within his reach; to regain his position on the limb, it is only necessary to make a little stronger effort with the tail, and throw his body upward at the same time.

"In speaking of the more obvious peculiarities of the Opossum, we may advert to the thinness and membranous character of the external ears, which may remind us in some degree of what has been heretofore said relative to the perfection of the sense of touch possessed by the bat, in consequence of the delicacy of the extended integument forming the ears and wings. The extremity of the nose of our animal is also covered by a soft, moist, and delicate integument, which is, no doubt, very sensitive. On the sides of the nose, or rather on the upper lip, there are numerous long and strong divergent whiskers, or bristles, projecting to the distance of nearly three inches; over each eye there are two long black bristles, rather softer than the others, somewhat crisped, or undulated, and slightly decurved; while, on the posterior part of the cheek and about an inch below and in front of the ear, there is a bunch of long, straight bristles (very similar to those of a hog), six or eight in number, projecting laterally, so as to form a right angle with the head. When the elongated conical form of the Opossum's head is recollected, together with its nocturnal habits, we cannot avoid remarking, that all these arrangements appear to have immediate reference to the safety of the animal, furnishing the means of directing its course, and warning it of the presence of bodies which otherwise might not be discovered until too late.

"The mouth of the Opossum is very wide when open, yet the animal does not drink by lapping, but by suction. The wideness of the mouth is rendered very remarkable when the female is approached, while in company with her young. She then silently drops the lower jaw to the greatest distance it is capable of moving, retracts the angles of the lips, and shows the whole of her teeth, which thus present a formidable array. She then utters a muttering kind of snarl, but does not snap, until the hand, or other object, be brought very close. If this be a stick, or any hard or insensible body, she seldom closes her mouth on it after the first or second time, but maintains the same gaping and snarling appearance, even when it is thrust into her mouth, At the same time, the young, if they have attained any size, either exhibit their signs of defiance, take refuge in the pouch of the mother, or, clinging to various parts of her body, hide their faces amidst her long hair.

"The general colour of the Opossum is a whitish gray. From the top of the head along the back and upper part of the sides, the gray is darkest, and this colour is produced by the intermixture of coarse white hairs, upwards of three inches long, with a shorter, closer, and softer hair, which is white at base, and black for about half an inch at tip. The whole pelage (fur) is of a woolly softness, and the long white hairs diverging considerably, allow the back parts to be seen, so as to give the general gray colour already mentioned. On the face the wool is short, and of a smoky white colour; that on the belly is of the same character, but is longer on the fore and hind legs; the colour is nearly black from the body to the digits, which are naked beneath. The tail is thick and black, for upwards of three inches at base, and is covered by small hexagonal scales, having short rigid hairs interspersed throughout its length, which are but slightly perceptible at a little distance. The Opossum is generally killed for the sake of its flesh and fat. Its wool is of considerable length and fineness during the winter season, and we should suppose, that in manufactures it would be equal to the sheep's wool which is wrought into coarse hats.

"The Opossum is a nocturnal and timid animal, depending for his safety more on cunning than strength. His motions are slow, and his walk, when on the ground, entirely plantigrade, which gives an appearance of clumsiness to his movements. When on the branches of trees, he moves with much greater ease, and with perfect security from sudden gusts of wind; even were his weight sufficient to break the limb on which he rests, there is no danger of his falling to the earth, unless when on the lowest branch, as he can certainly catch, and securely cling, to the smallest intervening twigs, either with the hands or the extremity of the tail. This organ is always employed by the animal while on the smaller branches of trees, as if to guard against such an occurrence, and it is very useful in aiding the Opossum to collect his food, by enabling him to suspend himself from a branch above, while rifling a bird's nest of its eggs, or gathering fruits.

"The food of the Opossum varies very much, according to circumstances. It preys upon birds, various small quadrupeds, eggs, and, no doubt, occasionally upon insects. The poultry yards are sometimes visited, and much havoc committed by the Opossum, as, like the weasel, this animal is fonder of cutting the throats and sucking the blood of a number of individuals, than of satisfying his hunger by eating the flesh of one. Among the wild fruits, the persimmon (*Diospyros Virginiana*) is a great favourite, and it is generally after this fruit is in perfection that the Opossum is killed by the country people for the market. At that season it is very fat, and but little difference is to be perceived between this fat and that of a young pig. The flavour of the flesh is compared to that of a roasting pig; we have in several instances seen it refused by dogs and cats, although the Opossum was in fine order, and but recently killed This may have been owing to some accidental circumstance, but it was uniformly rejected by these animals usually not very nice when raw flesh is offered.

"The hunting of the Opossum is a favourite sport with the country people, who frequently go out with their dogs at night, after the autumnal frosts have begun, and the persimmon fruit is in its most delicious state. The Opossum, as soon as he discovers the approach of his enemies, lies perfectly close to the branch, or places himself snugly in the angle where two limbs separate from each other. The dogs, however, soon announce the fact of his presence, by their baying, and the hunter, ascending the tree, discovers the branch upon which the animal is seated, and begins to shake it with great violence, to alarm, and cause him to relax his hold. This is soon effected, and the Opossum, attempting to escape to another limb, is pursued immediately, and the shaking is renewed with greater violence, until at length the terrified quadruped allows himself to drop to the ground, where hunters, or dogs, are prepared to despatch him.

"Should the hunter, as frequently happens, be unaccompanied by dogs when the Opossum falls to the ground, it does not immediately make its escape, but steals slowly and quietly to a little distance, and then gathering itself into as small a compass as possible, remains as still as if dead. Should there be any quantity of grass or underwood near the tree, this apparently simple artifice is frequently sufficient to secure the animal's escape, as it is difficult by moonlight, or in the shadow of the tree, to distinguish it; and if the hunter has not carefully observed the spot where it fell, his labour is often in vain. This circumstance, however, is generally attended to, and the Opossum derives but little benefit from his instinctive artifice.

"After remaining in this apparently lifeless condition for a considerable time, or so long as any noise indicative of danger can be heard, the Opossum slowly unfolds himself, and creeping as closely as possible upon the ground, would fain sneak off unperceived. Upon a shout, or outcry, in any tone, from his persecutor, he immediately renews his deathlike attitude and stillness. If then approached, moved, or handled, he is still seemingly dead, and might deceive any one not accustomed to his actions. This feigning is repeated as frequently as opportunity is allowed him of attempting to escape, and is known so well to the country folks, as to have long since passed into a proverb: 'He is playing *possum*,' is applied with great readiness by them to any one who is thought to act deceitfully, or wishes to appear what he is not.

"The usual haunts of the Opossum are thick forests, and their dens are generally in hollows of decayed trees, where they pass the day asleep, and sally forth, mostly after nightfall, to seek food. They are occasionally seen out during daylight, especially when they have young ones of considerable size, too large to be carried in the maternal pouch. The female then offers a very singular appearance, as she toils along with twelve or sixteen cubs, nearly of the size of rats, each with a turn of his tail around the root of the mother's, and clinging on her back and sides with paws, hands, and mouth. This circumstance was thought distinctive of another species, hence called *dorsigera*, but is equally true of the common or Virginian Opossum. It is exceedingly curious and interesting to see the young, when the mother is at rest, take refuge in the pouch, whence one or two of them may be seen peeping out, with an air of great comfort and satisfaction. The mother in this condition, or at any time in defence of her young, will make battle, biting with much keenness and severity, for which her long canine teeth are well suited.

"If taken young, the Opossum is generally tamed, and becomes very fond of human society, in a great degree relinquishes its nocturnal habits, and grows troublesome from its familiarity. We have had one thus tamed, which would follow the inmates of the house with great assiduity, and complain with a whining noise when left alone. As it grew older it became mischievous, from its restless curiosity, and there seemed to be no possibility of devising any contrivance effectually to secure it. The same circumstance is frequently remarked by persons who have attempted to detain them in captivity; and of the instances which have come to our knowledge, where even a great number were apparently well secured, they have all in a short time enlarged themselves, and been no more heard of. In some such instances these animals have escaped in the city, and for a long time have taken up their quarters in cellars, where their presence has never been suspected, as during the day they remained concealed. In this way it is very probable that many are still living in the city of Philadelphia, obtaining a plentiful food by their nightly labours."

THE MARMOSE, OR MURINE OPOSSUM

RESEMBLES in most respects the latter species; they are natives of the same climate, in the same continent, and are very much alike by the form of the body, the conformation of the feet, and the tail, a part of which is covered with scales, the upper part only being hairy. But the Marmose is smaller than the common Opossum, his snout is still sharper; the female has no bag under the belly, she has only two loose skins near the thighs, between which the young place themselves to stick to the paps. When the young are brought forth, they are not so large as small beans; they then stick to the paps. The brood of the Marmose is very numerous; we have seen ten small Marmoses, each sticking to a pap, and the mother had still four more paps. It is probable that these animals bring forth a few days after the conception. The young are then fœtuses only, which are not come to the fourth part of their growth.

THE CAYOPOLLIN, OF MEXICAN OPOSSUM.

SAYS Fernandez, is a small animal, a little larger than a rat, very much resembling the Opossum in the snout, the ears, and the tail, which is thicker and stronger than that of a rat; he makes use of it as we do our hands; he has thin transparent ears; the belly, the legs and feet white. The young, when they are frightened embrace the mother, who lifts them up on the trees. This species has been found on the mountains of New Spain.

THE FLYING OPOSSUM.

THIS animal is found in New South Wales: its head is like a squirrel's, with ears large and erect, but the fur is more delicate, and of a beautiful dark glossy colour, mixed with gray, the under parts white; on each hip is a tan coloured spot. The sailing membrane resembles the flying squirrel's, but is broader in proportion; on the fore legs it has five toes, with a claw on each; on the hind ones, four toes, and a long thumb, which enables the animal to use it as a hand; it is remarkable, that the three out claws of the hind feet are not separated like the others.

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CHAPTER XVI.

Of the Elephant—The Rhinoceros—The Camel and Dromedary—The Buffalo, the Urus, the Bison, the Arnee, and the Zebu.

THE ELEPHANT.

THE human race excepted, the Elephant is the most respectable of animals. In size he surpasses all other terrestrial creatures, and in understanding he is inferior only to man. Of all the brute creation, the Elephant, the dog, the ape, and the beaver, are most admirable for their sagacity; but the genius of the dog is only borrowed, being instructed by man in almost every thing he knows; the monkey has only the appearance of wisdom, and the beaver is only sensible with regard to himself, and those of his species. The Elephant is superior to them all three; he unites all their most eminent qualities. The hand is the principal organ of the monkey's dexterity; the Elephant with his trunk, which serves him instead of arms and hands, with which he can lift up, and seize the smallest, as well as the largest objects, carry them to his mouth, place them on his back, hold them, or throw them far off, has the same dexterity as the monkey, and at the same time the tractableness of the dog; he is like him susceptible of gratitude, capable of a strong attachment; he uses himself to man without reluctance, and submits to him, not so much by force, as by good treatment; he serves him with zeal, intelligence and fidelity; in fine, the Elephant, like the beaver, loves the society of his equals, and makes them understand him. They are often seen to assemble together, disperse, act in concert, and if they do not erect buildings, and do not work in common, it is perhaps, for want of room only, and tranquillity; for men have very anciently multiplied in all the regions inhabited by the Elephant; he consequently lives in fear and anxiety, and is nowhere a peaceful possessor of a space large and secure enough to establish his habitation on a settled spot. Every being in nature has his real price, and relative value;

to judge of both in the Elephant, we must allow him at least the judgment of the beaver, the dexterity of the monkey, the sentiment of the dog, and to add to these qualifications, the peculiar advantages of strength, size, and longevity. We must not forget his arms, or his defence, with which he can pierce through and conquer the lion. We must observe, that he shakes the ground at every step; that with his trunk he roots up trees; that with the strength of his body he makes a breach in a wall; that being terrible by his force, he is invincible by the resistance only of his enormous mass, and by the thickness of the leather which covers it; that he can carry on his back a tower armed in war, with a number of men; that he alone moves machines, and carries burthens, which six horses cannot move. To this prodigious strength he joins courage, prudence, coolness, and an exact obedience: he preserves moderation even in his most violent passion; he is more constant than impetuous in love; in anger he does not forget his friends; he never attacks any but those who have given him offence; he remembers favours as long as injuries: having no taste for flesh, and feeding chiefly upon vegetables, he is not naturally an enemy to other animals; he is beloved by them all, since all of them respect him, and have no cause to fear him. For these reasons, men have had at all times a veneration for this great, this first of animals. The ancients considered the Elephant as a prodigy, a miracle of nature; they have much exaggerated his natural faculties; they attribute to him, without hesitation, not only intellectual qualities, but moral virtues.

In a wild state, the Elephant is neither bloody nor ferocious; his manners are social; he seldom wanders alone; he commonly walks in company, the oldest leads the herd, the next in age drives them, and forms the rear; the young and the weak are in the middle. The females carry their young, and hold them close with their trunks. They only observe this order, however, in perilous marches, when they go to feed on cultivated lands; they walk or travel with less precaution in forests and solitary places, but still keeping at such a moderate distance from each other, as to be able to give mutual assistance, and seasonable warnings of danger. Some, however, straggle, and remain behind the others; none but these are attacked by hunters, for a small army would be requisite to assail the whole herd, and they could not conquer without a great loss of men; it is even dangerous to do them the least injury, they go straight to the offender, and, notwithstanding the weight of their body, they walk so fast that they easily overtake the lighest man in running; they pierce him through with their tusks, or seize him with their trunks, throw him against a stone, and tread him under their feet; but it is only when they have been provoked, that they become so furious and so implacable. It is said, that when they have been once attacked by men, or have fallen into a snare, they never forget it, and seek for revenge on all occasions. As they have an exquisite sense of smelling, perhaps more perfect than any other animal, owing to the large extent of their nose, they smell a man at a great distance, and could easily follow him by the track. These animals are fond of the banks of rivers, deep valleys, shady places, and marshy grounds; they cannot subsist a long while without water, and they make it thick and muddy before they drink; they often fill their trunks with it, either to convey it to their mouth, or only to cool their nose, and to amuse themselves in sprinkling it around them; they cannot support cold, and suffer equally from excessive heat, for, to avoid the burning rays of the sun, they penetrate into the thickest forests; they also bathe often in the water; the enormous size of their body is rather an advantage to them in swimming, and they do not swim so deep in the water as other animals; besides, the length of their trunk, which they erect, and through which they breathe, takes from them all fear of being drowned.

Their common food is roots, herbs, leaves, and young branches; they also eat fruit and corn, but they have a dislike to flesh and fish. When one of them finds abundant pasture, he calls the others, and invites them to come and feed with him. As they want a great quantity of fodder, they often change their place, and when they find cultivated lands, they make a prodigious waste; their bodies being of an enormous weight they destroy ten times more with their feet, than they consume for their food, which may be reckoned at the rate of one hundred and fifty pounds of grass daily. As they never feed but in great numbers, they waste a large territory in about an hour's time; for this reason the Indians and the Negroes take great pains to prevent their visits, and to drive them away, by making a great noise, and great fires; notwithstanding these precautions, however, the Elephants often take possession of them, drive away the cattle and men, and sometimes pull down their cottages. It is difficult to frighten them, as they are little susceptible of fear; nothing can stop them but fireworks, and crackers thrown amongst them, the sudden effect of which, often repeated, forces them sometimes to turn back. It is very difficult to part them, for they commonly attack their enemies all together, proceed unconcerned, or turn back.

The female Elephant goes two years with young; when she is in that condition the male never conjoins with her. They only bring forth a young one, which has teeth as soon as brought forth; he is then larger than a boar; yet his tusks are not visible, they appear soon after, and at six months old are some inches in length; at that age, the Elephant is larger than an ox, and the tusks continue to increase till he is advanced in years.

It is very easy to tame the Elephant. As he is the strongest and most rational of animals, he is more serviceable than any of them; but he was formerly supposed to feel his servile condition, and never to couple in a domestic state. This, however, has been found to be an erroneous opinion.

There is, therefore, no domestic Elephant but has been wild before; and the manner of taking, taming, and bringing them into submission, deserves particular attention. In the middle of forests, and in the vicinity of the places which they frequent, a large space is chosen, and encircled with palisadoes; the strongest trees of the forest serve instead of stakes, to which cross pieces of timber are fastened, which support the other stakes; a man may easily pass through this palisado; there is another great opening, through which the Elephant may go in, with a trap hanging over it, or a gate, which is shut behind him: to bring him to that enclosure, he must be enticed by a tame female ready to take the male; and when her leader thinks she is near enough to be heard, he obliges her to indicate by her cries the condition she is in; the wild male answers immediately, and begins his march to join her; she repeats her call now and then, and arrives first to the first enclosure, where the male, following her track, enters through the same gate. As soon as he perceives himself shut up, his ardour vanishes, and when he discovers the hunters, he becomes furious; they throw at him ropes with a running knot to stop him; they fetter his legs and his trunk, they bring two or three tame Elephants, led by dexterous men, and try to tie them with the wild Elephant, and at last, by dint of dexterity, strength, terror, and caresses, they succeed in taming him in a few days.

The Elephant, once tamed, becomes the most tractable and the most submissive of all animals; he conceives an affection for his leader, he caresses him, and seems to guess whatever can please him: in a little time he understands the signs, and even the expression of sounds; he distinguishes the tone of command, that of anger or good nature, and acts accordingly: he never mistakes the words of his master; he receives his orders with attention, executes them with prudence and eagerness, without precipitation; for his motions are always measured, and his character seems to participate of the gravity of his body; he is easily taught to bend the knee to assist those who will ride on his back; he caresses his friends with his trunk, and salutes with it the persons he is directed to take notice of: he makes use of it to lift burdens, and helps to load himself; he has no aversion to being clothed, and seems to delight in a golden harness or magnificent trappings; he is easily put to the traces of carts, and draws ships upon occasion: he draws evenly, without stopping, or any marks of dislike, provided he is not insulted by unreasonable correction, and provided his driver seems to be thankful for the spontaneous exertion of his strength. His leader is mounted on his neck, and makes use of an iron rod crooked at the end with which he strikes him gently on the head to make him turn or increase his pace; but often a word is sufficient, especially if he has had time to make himself well acquainted with his leader, and has a confidence in him; his attachment is sometimes so strong and so lasting, and his affection so great, that commonly he refuses to serve under any other person, and he is known to have died of grief for having in anger killed his governor.

The species f the Elephant is numerous, though they bring forth but one young once in two or three years; the shorter the life of animals is, the more they multiply: in the Elephant, the length of his life compensates the small number; and if it is true, as has been affirmed, that he lives two hundred years, and that he begets when he is one hundred and twenty years old, each couple brings forth forty young in that space of time; besides, having nothing to fear from other animals, and little even from men, who take them with great difficulty, the species has not decreased, and is generally dispersed in all the southern parts of Africa and Asia.

From time immemorial the Indians made use of Elephants in war. Amongst those nations unacquainted with the European military discipline, they were the best troop of their armies; and as long as battles were decided by mere weapons, they commonly vanquished: yet we see in history, that the Greeks and Romans used themselves soon to those monsters of war; they opened their ranks to let them go through; they did not attempt to wound them, but threw all their darts against their leaders, who were forced to surrender, and to calm the Elephants when separated from their troops; and now that fire is become the element of war, and the principal instrument of death, the Elephants, who are afraid of the noise and the fire of the artillery, would be rather an incumbrance in battle and more dangerous than useful.

In those regions, however, where our cannons and murdering arts are yet scarcely known, they fight still with Elephants. At Cochin, and in the other parts of Malabar, they do not make use of horses, and all those who do not fight on foot are mounted upon Elephants In Tonquin, Siam, and Pegu, the king, and all the grandees, never ride but upon Elephants: on festival days they are preceded and followed by a great number of these animals richly caparisoned, and covered with the richest stuffs. On comparing the relations of travellers and historians, it appears that the Elephants are more numerous in Africa than in Asia; they are there also less mistrustful, not so wild, and, as if they knew the unskilfulness and the little power of the men with whom they have to deal in this part of the world. come every day without fear to their habitations.

In general, the Elephants of Asia are of a larger size, and superior in strength to those of Africa; in particular, those of Ceylon, who exceed in courage and sagacity all those of Asia: probably they owe these qualifications to their education, more improved in Ceylon than any where else. They differ also in other particulars, so as to constitute them a different species. "His head (says Mr. Bennett) is more oblong, and his forehead presents in the centre a deep concavity between two lateral and rounded elevations; that of the African being round and convex in all its parts. The teeth of the former are composed of transverse vertical laminæ of equal breadth, while those of the latter form rhomboidal or lozenge-shaped divisions. The ears of the Asiatic are also smaller, and descend no lower than his neck, and he exhibits four distinct toes on his hind feet; the African, on the contrary, is furnished with ears of much greater size, descending to his legs, and no more than three toes are visible on his posterior extremities."

The Elephants of the Indies easily carry burdens of three or four thousand weight; the smallest, that is, those of Africa, lift up freely with their trunks burdens of two hundred pounds weight, and place them on their shoulders; they take in this trunk a great quantity of water, which they throw out around them at seven or eight feet distance; they can carry burdens of more than a thousand weight upon their tusks; with their trunk they break branches of trees, and with their tusks they root out the trees. One may judge of their strength by their agility, considering at the same time the bulk of their body; they walk as fast as a small horse on the trot, and when they run, they can keep up with a horse on full gallop, which seldom happens in their wild state, except when they are provoked by anger, or frightened. The tame Elephants travel easily, and without fatigue fifteen or twenty leagues a day; and when they are hurried, they may travel thirty-five or forty leagues. They are heard at a great distance, and may be followed very near on the track, for the traces which they leave on the ground are not equivocal; and on the ground where the steps of their feet are marked, they are fifteen or eighteen inches in diameter.

When the Elephant is taken care of, he lives a long while even in captivity. Some authors have written, that he lives four or five hundred years; others, two or three hundred; and the most credible, one hundred and twenty, thirty, and even one hundred and fifty years. Whatever care, however, is taken of the Elephant, he does not live long in temperate countries, and still less in cold climates. The Elephant which the king of Portugal sent to Louis XIV. in 1668, and which was then but four years old, died in his seventeenth, in January, 1681, and lived only thirteen years in the menagerie of Versailles, where he was treated with care and tenderness, and fed with profusion: he had every day four pounds of bread, twelve pints of wine, two buckets of porridge, with four or five pounds of bread, two buckets of rice boiled in water, without reckoning what was given to him by visiters; he had, besides, every day one sheaf of corn to amuse himself; for, after he had eaten the corn ears, he made a kind of whip of straw, and used it to drive away the flies; he delighted in breaking the straw in small bits, which he did with great dexterity with his trunk; and, as he was led to walk daily, he plucked the grass and ate it.

The common colour of the Elephant is ash-gray, or blackish. The white are extremely scarce; some have been seen at different times in the Indies, where also some are found of a reddish colour.

The Elephant has very small eyes, comparatively with his enormous size, but they are sensible and lively: and what distinguishes them from all other animals is their pathetic, sentimental expression. He seems to reflect, to think, and to deliberate; and never acts till he has examined and observed several times, without passion or precipitation, the signs which he is to obey. Dogs, the eyes of which have much expression, are animals too lively to distinguish their successive sensations; but as the Elephant is naturally grave and sedate, one may read in his eyes the order and outward appearance of his interior affections.

He has a quick hearing, and this organ is outwardly like that of smelling, more marked in the Elephant than in any other animal; his ears are very large, even in proportion to his body; they are flat, and close to the head, like those of a man; they commonly hang down, but he raises them up, and moves them with great facility; he makes use of them to wipe his eyes, and to cover them against the inconveniency of dust and flies. He delights in the sound of instruments, and seems to like music; he soon learns to beat time, and to move accordingly: he seems animated by the beat of the drum and the sound of trumpets; he has an exquisite smell, and is passionately fond of perfumes of all sorts, and of fragrant flowers; he selects them one after another, and makes nosegays, which he smells with eagerness, and then carries them to his mouth as if he intended to taste them.

His sense of feeling centres in his trunk; but it is as delicate and as distinct in that sort of hand as in that of man: this trunk, composed of membranes, nerves, and muscles, is, at the same time, a member capable of motion, and an organ of sense: the animal can not only move and bend it, but he can shorten, lengthen, and turn it all ways. The extremity of this trunk terminates by an edge, which projects above like a finger; it is with this sort of finger that the Elephant does whatever we do with ours; he picks up from the ground the smallest pieces of money; he gathers nuts and flowers, choosing them one after another; he unties knots, opens and shuts doors, turning the keys, and bolts them; he learns to draw regular characters with an instrument as small as a pen.

Although the Elephant has a more retentive memory, and more intelligence than any other animal, he has the brain smaller than most of them: he is at the same time, a miracle of intelligence and a monster of matter; his body is very thick, without any suppleness; the neck is short and very stiff; the head small and deformed; the ears of an excessive diameter; and the nose is of a still more disproportionate length; the eyes are too small, as well as the mouth; his legs are like massive pillars, straight and stiff; the feet so short and so small, that he seems to have none; the skin is hard, thick, and callous. All these peculiarities are remarkable, as all of them are exhibited in large; and they are more disagreeable to the eye, as most of their deformities have no other example in the creation; no other animal having either the head, the feet, the nose, the ears, or the tusks, made or placed like those of the Elephant.

The Elephant is yet singular in the conformation of the feet and the texture of the skin. He is not clothed with hair like other quadrupeds; his skin is bare; some bristles issue out of the chops; they are very thin on the body, and thicker on the eyelids, on the back part of the head, within the ears, the thighs, and the legs. The epidermis, or outside skin, hard and callous, has two sorts of wrinkles, some hollow, others prominent In man, and other animals, the epidermis sticks every where close to the skin. In the Elephant, it is only fastened by some points, like two quilted stuffs one above the other. This epidermis is naturally dry, and soon acquires three or four lines of thickness, by the crusts which are generated one above the other drying up. It is this thickness of the epidermis which produces the *elephantiasis*, or dry leprosy, to which man, whose skin is bare, like that of the Elephant, is sometimes subject. This distemper is very common to Elephants; and, to prevent it, the Indians take care to rub them often with oil, and to preserve the skin supple by frequent bathing. It is rather tender where it is not callous; and the Elephant is so fearful of the sting of the flies, that he not only employs his natural motions, but even the resources of his intelligence, to get rid of them; he makes use of his tail, of his ears, of his trunk, to strike them; he contracts his skin wherever he can, and squeezes them to death betwixt his wringles. His skin is cleaned by rubbing it with pumice stones, and afterwards pouring on it perfumed oil and colours. The conformation of the feet and legs is also singular, and different in the Elephant from that of other animals; the fore-legs seem to be higher than those behind, yet the hind-legs are the longest; they are not bent like the hind-legs of a horse or an ox, the thighs of which seem to be of the same piece with the buttocks; their knee is very near the belly, and the foot so high and so long, that it seems to make a great part of the leg. In the Elephant, on the contrary, this part is very short, and touches the ground; he has the knee, like man, in the middle of the leg, not near the belly. This foot, so short and so small, is divided into five toes, which are all covered with a skin, none appearing outwardly; one sees only a sort of claws, the number of which varies, though that of the toes is constant; for he has always five to each foot, and commonly also five claws; but sometimes he has no more than four, or even three; and, in this case, they do not correspond exactly with the extremity of the fingers.

The ears of the Elephant are very long; his tail is not longer than the ear; it is commonly near three feet in length; it is rather thin, sharp, and garnished at the extremity with a tuft of large, black, shining, and solid bristles which are as large and as strong as wire; and a man cannot break them with his hands, as they are elastic and pliant. This tuft of hair is an ornament which the Negro women are particularly fond of; and they attribute to it some particular virtue, according to their superstitious notions; an Elephant's tail is sometimes sold for two or three slaves; and the Negroes often hazard their lives to cut and snatch it from the living animal.

The largest Elephants of the Indies, and the eastern coast of Africa, are fourteen feet high; the smallest, which are found in Senegal, and in the other western parts of Africa, are not above ten or eleven feet; and those which have been brought young into Europe, were not so high. That at the menagerie at Versailles, which came from Congo, was but seven feet and a half high in his seventeenth year. During thirteen years that he lived in France, he did not grow above a foot; so that at the age of four, when he was sent, he was only six feet and a half high.

In order to give a complete idea of the nature and intelligence of this singular animal, we shall insert here some particulars communicated by the Marquis of Montmirail. The Indians make use of the Elephant to carry artillery over mountains; and it is then, that he gives the greatest proofs of his intelligence. He acts in the following manner:—When the oxen yoked two and two, endeavour to draw up the mountain the piece of artillery, the Elephant pushes the breech of the gun with his forehead; and at every effort that he makes, he supports the carriage with his knee, which he places near the wheel; and it seems as if he understood what was said to him. When his leader employs him in some hard labour, he explains what is his work, and the reasons which ought to engage him to obey If the Elephant shows an aversion to comply, the *cornac* (so his leader is called) promises to give him arrack, or something he likes; then the animal agrees to every thing proposed; but it is dangerous to forfeit his word; more than one *cornac* has been the victim of his deception. An instance of this happened in the Deccan, which deserves to be recorded; and, however incredible it may appear, it is exactly true. An Elephant had been revenged of his cornac by killing him. His wife, witness of this catastrophe, took her two children and threw them to the feet of the animal, still furious; telling him, *Since thou hast killed my husband, take also my life, and that of my children.* The Elephant stopped short, grew calm, and, as if he had been moved with regret and compassion, took with his trunk the largest of the two children, placed it on his neck, adopted him for his cornac, and would have no other leader.

If the Elephant is vindictive, he is no less grateful. A soldier of Pondicherry, who commonly carried to one of these animals a certain measure of arrack every time that he received his pay, having one day drank more than common, and seeing himself pursued by the guard, who threatened to conduct him to prison, took refuge under the Elephant, and slept there. It was in vain that the guard attempted to draw him out from this asylum; the Elephant defended him with his trunk. The next day the soldier, become sober, was struck with terror to lie under an animal of this enormous bulk. The Elephant, who, no doubt, perceived his consternation, caressed him with his trunk, to remove his fears, and made him understand that he might depart freely.

The Elephant falls sometimes into a sort of frenzy, which deprives him of his tractableness, and makes him extremely formidable. This commonly happens at the season when the male is desirous of the female

He is commonly killed on the first symptoms of madness, for fear of mischief.* Sometimes he is tied with heavy chains, in hopes that he will come to himself; but when he is in his natural state, the most acute pains cannot engage him to do any harm to persons who have not offended him. An Elephant, furious with the wounds which he had received in battle at Hambour, ran through the fields, and cried out in a most hideous manner. A soldier, who, notwithstanding the warning of his companions, could not fly, perhaps because he was wounded, remained in his way; the Elephant was afraid to trample him under his feet, took him with his trunk, placed him gently on one side of the road, and continued his march. The gentlemen of the Academy of Sciences have also communicated to us some facts which they have learned from those who governed the Elephant at the menagerie of Versailles; and these facts seem to deserve a place. "The Elephant seemed to discern when any person made a fool of him; and he remembered the affront to be revenged of it the first opportunity. Having been balked by a man, who feigned to throw something into his mouth, he struck him with his trunk, and broke two of his ribs; afterwards he trampled him under his feet, and broke one of his legs; and having kneeled down, he tried to thrust his tusks into the man's belly, which, however, went into the ground on both sides of the thigh, which was not wounded. He bruised another man, by squeezing him against the wall, for a similar mockery. A painter was desirous to draw him in an extraordinary attitude, which was, to keep his trunk erect, and the mouth open. The servant of the painter, to make him remain in that attitude, threw fruits into his mouth; but afterwards he deceived him, which provoked his indignation; and, as if he had known that the cause of this deception was the painter's desire of having him drawn, he was revenged on the master, by throwing with his trunk a great quantity of water, which spoiled the paper intended for his design."

He made less use of his strength than of his dexterity, which was such, that he untied, with great facility, a double leather string which fastened his leg, with his mouth untying it from the buckle's tong, and after this buckle had a small string twisted around it, with divers knots, he untied them all without breaking any thing. One night, that he had thus disentangled himself from his leather strings, he broke open, so dexterously, the door of his lodge, that his governor was not waked by the noise. He went thence into divers yards of the menagerie, breaking open the doors that were shut, and pulling down the stone work, when the passage was too narrow for him; and thus he went into the lodges of other animals, terrifying them to such a degree, that they ran away to hide themselves in the most remote part of the park. In fine, to omit nothing of what may contribute to make all the natural faculties of this animal perfectly known, as well as his acquired knowledge, we shall add some facts, extracted from the most credible authors.

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* Two instances have happened, within a few years, one at Geneva, and one at Exeter Change, in which it became necessary to destroy the unfortunate animal.

Of five Elephants (says Tavernier), which hunters had taken, three escaped, although their bodies and their legs were fastened with chains and ropes. These men told us a very surprising circumstance, if we can believe it, which is, that when once these Elephants have been caught, and eluded the snares of their adversaries, if they are compelled to go into the woods, they are mistrustful, and break with their trunk a large branch, with which they sound the ground before they put their foot upon it, to discover if there are any holes on their passage, not to be caught a second time; which made the hunters, who related this singularity, despair of catching again the three Elephants who had escaped. We saw the other two which they had caught; each of them was betwixt two tame Elephants; and around the wild Elephants were six men, holding spears. They spoke to these animals in presenting them something to eat, and telling them, in their language, *Take this, and eat it.* They had small bundles of hay, bits of black sugar, or rice boiled in water, with pepper. When the wild Elephant refused to do what he was ordered, the men commanded the tame Elephants to beat him, which they did immediately; one striking his forehead with his; and when he seemed to aim at revenge against his aggressor another struck

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slender; the body is covered in many parts with long shaggy hair; the horns are short, rounded, and pointing outwards; and on the shoulders is a high protuberance, which is the distinctive mark of the Bison. This hunch is considered as a great delicacy by the Indians.

These animals are so ferocious, that they cannot be safely pursued, except in forests, where there are trees large enough to conceal the hunters: they are, therefore, generally taken in pitfalls covered with boughs of trees and grass, where they are easily overcome and slain. They commonly range in droves, feeding in the open savannahs morning and evening; and reposing during the sultry part of the day on the shady banks of rivulets or streams of water. Sometimes they leave so deep an impression of their feet on the moist sand, as to be thus traced and shot by the Indians; but on these occasions, the utmost precaution is requisite; since their sense of smelling is extremely acute, and when slightly wounded, they become perfectly infuriate, and certain death awaits the assailant. Yet, notwithstanding their wildness in a state of nature, there is reason to believe that they might be domesticated without much difficulty, and their immense strength would render them a valuable acquisition to mankind. The experiment has been tried in America, and it has fully succeeded. There is something affecting in the fondness of the young Bison for its dam. If the mother be killed, the calf, instead of attempting to escape, follows the hunter who is carrying away the remains of its parent, and manifests strong signs of sorrow.

THE ARNEE.

This animal, which is an inhabitant of various parts of India north of Bengal, far exceeds in size any of the cattle tribe that has hitherto been discovered; it being from twelve to fifteen feet in height. The horns, which are full two feet in length, are erect and semilunar, flattened, and annularly wrinkled, with smooth, round, approaching points. The Arnee is seldom seen within the European settlements, but a very young one was picked up alive in the Ganges, some years ago, which was as big as an immensely large bullock, and weighed nearly three quarters of a ton. A British officer

him; so that the poor wild Elephant perceived he had nothing to do, but to obey.

I have observed several times (says Edward Terry), that the Elephant does many things which are rather an indication of human reasoning, than a simple, natural instinct. He does whatever his master commands him. If he orders him to frighten any person, he advances towards him with the same fury as if he would tear him to pieces; and when he comes near him, he stops short, without doing him any harm. If the master wishes to affront another, he speaks to the Elephant, who takes with his trunk dirty water, and throws it at his face. The Mogul has Elephants for the execution of criminals condemned to death. If their leader bids them to dispatch these wretches soon, they tear them to pieces in a moment with their feet: on the contrary, if he commands them to make these criminals languish, they break their bones one after another, and make them suffer torments as cruel as those of the wheel.

THE RHINOCEROS.

After the elephant the Rhinoceros is the most powerful of all quadrupeds. He is at least twelve feet in length, from the extremity of the snout to the tail; six or seven feet in height; and the circumference of his body is very near equal to his length; he is therefore like the elephant in bulk; and if he appears much smaller, it is because his legs are much shorter in proportion to those of the elephant; but he differs widely from that sagacious animal, in his natural faculties, and his intelligence; having received from Nature merely what she grants in common to all animals; deprived of all feeling in the skin, having no organ answering the purpose of hands, nor distinct for the sense of feeling, he has nothing instead of a trunk, but a moveable upper lip, in which centres all his dexterity. He is superior to other animals only in strength, size, and the offensive weapon which he carries upon his nose, and which is peculiar to him. This weapon is a very hard horn, solid throughout, and placed more advanageously than the horns of ruminating animals; these only protect the superior parts of the head and neck, whilst the horn of the Rhinoceros defends all the

but when they cannot reach such places of shelter, and are involved in falls of snow, they place their heads near each other, with their muzzles downward towards the ground. In this situation they will remain for several days, and hunger will sometimes compel them to gnaw each other's wool. They yield from two to six quarts of milk a day. Their wool is not shorn, but loosens of itself about the end of May, and is then stripped off at once like a skin.

In warm climates, some are covered with wool, others with hair, and a third kind with hair mixed with wool. The first kind of Sheep of those countries is that commonly called the Barbary or Arabian Sheep, which entirely resembles the tame kind, excepting in the tail, which is very much loaded with fat, is often more than a foot broad, and weighs upwards of twenty pounds. As for external appearance, this Sheep has nothing remarkable but the tail, which he carries as if a pillow was fastened to his hinder parts. Among this kind of broad-tailed Sheep, there are some whose tails are so long and heavy, that the shepherds are obliged to fasten a small board with wheels, in order to support them as they walk along. This tail, which is a substance between marrow and fat, is considered as a great delicacy. In the Levant, these Sheep are clothed with a very fine wool. In the hotter countries, as Madagascar and India, they are clothed with hair. The superabundance of fat, which in our Sheep fixes upon the reins, in these Sheep descends under the vertebræ of the tail; the other parts of the body are less charged with it than in our fat Sheep. This variety is to be attributed to the climate, the food, and the care of mankind; for these broad, or long-tailed Sheep, are tame, like those of our country; and they even demand much more care and management. This breed is much more dispersed than ours; they are commonly met with in Tartary, Thibet, Turkey, Persia, Syria, Egypt, Barbary, Ethiopia, and Madagascar; and even as far as the Cape of Good Hope. In Thibet, their fleeces, which are very fine, are manufactured into shawls.

THE STREPSICEROS.

In the islands of the Archipelago, and chiefly in the island of Candia, there is a breed of Sheep of which

(being but two years old), the expenses of his food, and his voyage, amounted to near one thousand pounds sterling; he was fed with rice, sugar, and hay. They gave him daily seven pounds of rice, mixed with three pounds of sugar; which they divided into three parts. He had also a great quantity of hay and green grass, to which he gave the preference. His drink was nothing but water, of which he drank a great quantity at once. He was of a quiet disposition, and let his manager touch him on all the parts of his body. He grew unruly when he was struck, or was hungry; and in both cases he could not be appeased without giving him something to eat. When he was angry, he leaped forward with impetuosity to a great height, beating furiously the walls with his head; which he did with a prodigious quickness, notwithstanding his heavy appearance.

This Rhinoceros, when he was two years old, was not much higher than a young cow who has not yet borne young; but his body was very long, and very thick. The tongue of this young Rhinoceros was soft, like that of a calf; his eyes had no vivacity; they are like those of a hog in form, and were placed very low; that is, nearer the opening of the nostrils.

Mr. Parsons says, that he has observed a very particular quality in this animal; he hearkened with a sort of continual attention to any noise; so that, if he was even sleepy, employed in eating, or in satisfying other urgent wants, he started instantly, raised up his head, and gave attention till the noise had ceased.

It is certain that some Rhinoceroses have but one horn on the nose, and others two. In the two-horned Rhinoceros one of the horns is smaller than the other, and is situated above it. When the animal is quiescent these horns are loose, but they become fixed when it is irritated. There are single horns of three feet and a half, and perhaps of more than four feet in length, by six or seven inches in diameter at the basis; there are also double horns which are but two feet in length. Commonly, these horns are brown, or olive colour; yet some are gray, and even white. They have only a small concavity, in form of a cup, at their basis, by which they are fastened to the skin of the nose; the remaining part of the horn is solid, and very hard It is with this weapon that the Rhinoceros is aid to attack, and sometimes to wound mortally, the largest elephants, whose long legs give to the Rhinoceros, who has them much shorter, an opportunity of striking them with his horn under the belly, where the skin is tender, and more penetrable; but when he misses the first blow, the elephant throws him on the ground, and kills him.

The horn of the Rhinoce os is more valued by the Indians than the ivory of the elephant; not so much on account of the matter, of which they make several works with the chisel, but for its substance, to which they attribute divers virtues, and medicinal properties. The white ones, as the most rare, are also those which they value most. Cups made of this horn are used to drink out of by many of the Indian princes, under the erroneous idea that when any poisonous fluid is put into them, the liquor will ferment, and run over the top.

The Rhinoceros, without being ferocious or carnivorous, or even very wild, is nevertheless untameable. He is of the nature of a hog, blunt and grunting, without intellect, without sentiment, and without tractableness. These animals are also, like the hog, very much inclined to wallow in the mire; they like damp and marshy places, and seldom leave the banks of rivers. They are found in Asia and Africa, in Bengal, Siam, Laos, in the Mogul dominions, in Sumatra, in Java, in Abyssinia, and about the Cape of Good Hope. But, in general, the species is not so numerous, or so universally spread, as that of the elephant. The female brings forth but one young, and at a great distance of time. In the first month the Rhinoceros is not much bigger than a large dog; he has not, when first brought forth, the horn on the nose, although the rudiment of it is seen in the fœtus. When he is two years old, this horn is only an inch long; and in his sixth year, it is about ten inches; and as some of these horns have been seen very near four feet long, it seems they grow till his middle age, and perhaps during the whole life of the animal, which must be long, since the Rhinoceros described by Mr. Parsons was not come to half his growth when he was two years old; which makes it probable, tha this animal lives, like a man, seventy or eighty years

Without being useful, as the elephant, the Rhinoceros is very hurtful, by the prodigious devastation which he makes in the fields. The skin is the most valuable thing of this animal. His flesh is excellent, according to the taste of Indians and Negroes. Kolben says, he has often eaten it with great pleasure. His skin makes the best and hardest leather in the world; and not only his horn, but all the other parts of his body, and even his blood, his urine, and his excrements, are esteemed as antidotes against poison, or a remedy against several diseases; probably, however, all those virtues are imaginary.

The Rhinoceros feeds upon herbs, thistles, prickles, shrubs, and he prefers this wild food to the sweet pasture of the verdant meadows; he is very fond of sugar-canes, and eats all sorts of corn. Having no taste whatever for flesh, he does not molest small animals, neither fears the large ones, living in peace with them all, even with the tiger, who often accompanies him, without daring to attack him: I doubt, therefore, whether the battles betwixt the elephant and the Rhinoceros have any foundation; they must, however, seldom happen, since there is no motive for war on either side; and, besides, no sort of antipathy has been observed between these animals. Some have even been seen in captivity, living quietly together, without giving offence or provocation to each other.

The Rhinoceroses do not herd together, nor march in troops, like the elephant; they are wilder, and more solitary, and perhaps more difficult to be hunted and subdued; they never attack men unless provoked; but then they become furious, and are very formidable: the steel of Damascus, the scimitars of Japan, cannot make an incision in his skin; the darts and lances cannot pierce him through: his skin even resists the balls of the musket; those of lead become flat upon his leather, and the iron ingots cannot penetrate through it: the only places absolutely penetrable in this body armed with a cuirass, are the belly, the eyes, and round the ears; so that huntsmen, instead of attacking this animal standing, follow him at a distance by his track, and wait to approach him at the time that he sleeps or rests himself. There is in the King of France's cabinet a fœtus of a Rhinoceros, which was sent from the island are longer, and proportionably much less; the horns not so round, black, and partly compressed, with a tuft of hair frizzled over his forehead; his hide is likewise thicker and harder than that of the ox; his flesh is black and hard, and not only disagreeable to the taste. but to the smell; the milk of the female is not so good as that of the cow; nevertheless, she yields a greater quantity. In hot countries, almost all the cheese is made of Buffaloes' milk. The flesh of the young Buffaloes, though killed during the suckling time, is not good. The hide alone is of more value than all the rest of the beast, whose tongue is the only part that is fit to eat. This hide is firm, light, and almost impenetrable. As these animals, in general, are larger and stronger than the oxen, they are very serviceable in the plough; they draw well, but do not carry burdens; they are led by the means of a ring passed through their nose. Two Buffaloes harnessed, or rather chained, to a wagon, will draw as much as four strong horses. As they carry their tails and their heads naturally downwards, they employ the whole force of their body in drawing; and this heavy mass greatly surpasses that of a horse or a labouring ox.

The form and thickness of the Buffalo alone are sufficient to indicate that he is a native of the hottest countries. The largest quadrupeds belong to the torrid zone in the Old Continent; and the Buffalo, for his size and thickness, ought to be classed with the elephant, the rhinoceros, and the hippopotamus. The camel is more elevated, but slenderer, and is also an inhabitant of the southern countries of Africa and Asia: nevertheless, the Buffaloes live and multiply in Italy, in France, and in other temperate provinces. Those that are in the French king's menagerie have brought forth two or three times. The female has but one at a time, and goes about twelve months; which is another proof of the difference between this species and that of the cow, which only goes nine months. It appears also that these animals are gentler and less brutal in their native country; and the hotter the climate is, the more tractable is their nature. In Egypt they are more so than in Italy; and in India they are more so than in Egypt. These of Italy have also more hair than those of Egypt, and those of Egypt more than those of India. Their climates they are produced in. Aristotle has judiciously marked the two principal breeds; the first (which has two bunches,) under the name of the BACTRIAN CAMEL; and the second, under that of the ARABIAN CAMEL; the first are called TURKMAN, and the others ARABIAN CAMELS. This division still subsists, with this difference only, that it appears, since the discovery of those parts of Africa and Asia which were unknown to the ancients, that the Dromedary is, without comparison, more numerous and more universal than the Camel; the last being seldom to be found in any other place than in Turkey, and in some other parts of the Levant; while the Dromedary, more common than any other beast of his size, is to be found in all the northern parts of Africa, in Egypt, in Persia, in South Tartary, and in all the northern parts of India.

The Dromedary, therefore, occupies an immense tract of land, while the Camel is confined to a small spot of ground; the first inhabits hot and parched regions; the second a more moist and temperate soil. The Camel appears to be a native of Arabia; for it is not only the country where there is the greatest number, but it is also best accommodated to their nature. Arabia is the dryest country in the world; and the Camel is the least thirsty of all animals, and can pass seven days without any drink. The land is almost in every part dry and sandy: the feet of the Camel are formed to travel in sand; while on the contrary, he cannot support himself in moist and slippery ground. Herbage and pasture are wanting to this country, as is the ox, whose place is supplied by the Camel.

The Arabs regard the Camel as a present from heaven, a sacred animal, without whose aid they could neither subsist, trade, nor travel. It has been emphatically called the ship of the desert. Its milk is their common nourishment; they likewise eat its flesh, especially that of the young ones, which they reckon very good. The hair of these animals, which is fine and soft, is renewed every year, and serves them to make stuffs for their clothing and their furniture. Blessed with their Camels, they not only want for nothing, but they even fear nothing. With them they can, in a single day, place a tract of desert, of fifty miles, between them and their enemies, and all the armies in the

slender; the body is covered in many parts with long shaggy hair; the horns are short, rounded, and pointing outwards; and on the shoulders is a high protuberance, which is the distinctive mark of the Bison. This hunch is considered as a great delicacy by the Indians.

These animals are so ferocious, that they cannot be safely pursued, except in forests, where there are trees large enough to conceal the hunters: they are, therefore, generally taken in pitfalls covered with boughs of trees and grass, where they are easily overcome and slain. They commonly range in droves, feeding in the open savannahs morning and evening; and reposing during the sultry part of the day on the shady banks of rivulets or streams of water. Sometimes they leave so deep an impression of their feet on the moist sand, as to be thus traced and shot by the Indians; but on these occasions, the utmost precaution is requisite; since their sense of smelling is extremely acute, and when slightly wounded, they become perfectly infuriate, and certain death awaits the assailant. Yet, notwithstanding their wildness in a state of nature, there is reason to believe that they might be domesticated without much difficulty, and their immense strength would render them a valuable acquisition to mankind. The experiment has been tried in America, and it has fully succeeded. There is something affecting in the fondness of the young Bison for its dam. If the mother be killed, the calf, instead of attempting to escape, follows the hunter who is carrying away the remains of its parent, and manifests strong signs of sorrow.

THE ARNEE.

This animal, which is an inhabitant of various parts of India north of Bengal, far exceeds in size any of the cattle tribe that has hitherto been discovered; it being from twelve to fifteen feet in height. The horns, which are full two feet in length, are erect and semilunar, flattened, and annularly wrinkled, with smooth, round, approaching points. The Arnee is seldom seen within the European settlements, but a very young one was picked up alive in the Ganges, some years ago, which was as big as an immensely large bullock, and weighed nearly three quarters of a ton. A British officer

earth, and loads them, in this situation, with a weight as heavy as they usually carry, which he only relieves them from to give them a heavier. Instead of suffering them to feed every hour, and drink even when they are thirsty, he regulates their repasts, and, by degrees, increases them to greater distances between each meal, diminishing also, at the same time, the quantity of their food. When they are a little stronger, he exercises them to the course; he excites them by the example of horses, and endeavours to render them also as swift, and more robust; at length, when he is assured of the strength and swiftness of his Camels, and that they can endure hunger and thirst, he then loads them with whatever is necessary for his and their subsistence. He departs with them, arrives unexpectedly at the borders of the desert, stops the first passenger he sees, pillages the straggling habitations, and loads his Camels with his booty. If he is pursued he is obliged to expedite his retreat; and then he displays all his own and his animals' talents. Mounted on one of his swiftest Camels, he conducts the troop, makes them travel day and night, almost without stopping either to eat or drink. In this manner he easily passes over three hundred miles in eight days; and, during all that time of fatigue and travel, he never unloads his Camels, and only allows them an hour of repose, and a ball of paste each day. They often run in this manner for eight or nine days without meeting with any water, during which time they never drink; and when by chance they find a pool at some distance from their route, they smell the water at more than half a mile before they come to it. Thirst now makes them redouble their pace; and then they drink enough for all the time past, and for as long to come; for often they are many weeks in travelling; and their time of abstinence endures as long as they are upon their journey.

In Turkey, Persia, Egypt, Arabia, Barbary, &c. they use no other carriage for their merchandise than Camels, which is, of all their conveyances, the most ready, and the cheapest. Merchants, and other travellers, assemble themselves in caravans, to avoid the insults and piracies of the Arabs. These caravans are often very numerous, and often composed of more Camels than men. Every one of these Camels is

slender; the body is covered in many parts with long shaggy hair; the horns are short, rounded, and pointing outwards; and on the shoulders is a high protuberance, which is the distinctive mark of the Bison. This hunch is considered as a great delicacy by the Indians.

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from the custom to which these animals are constrained, of forcing them, when quite young, to lie upon their stomach with their legs bent under them, and in that cramped posture to bear not only the weight of their body, but also the burdens with which they are laden. These poor animals must suffer a great deal, as they make lamentable cries, especially when they are overloaded; and, notwithstanding they are continually abused, they have as much spirit as docility. At the first sign they bend their legs under their bodies, and kneeling upon the ground, they are unloaded, without the trouble of lifting up the load to a great height, which must happen, were they to stand upright. As soon as they are loaded, they raise themselves up again without any assistance or support; and the conductor, mounted on one of them, precedes the whole troop, who follow him in the same pace as he leads. They have neither need of whip or spur to excite them: but, when they begin to be fatigued, their conductors support their spirits, or rather charm their weariness, by a song, or the sound of some instrument. When they want to prolong the route, or double the day's journey, they give them an hour's rest; after which, renewing their song, they again proceed on their way for many hours more; and the singing continues until the time that they stop. Then the Camels again kneel down on the earth, to be relieved from the burden, by the cords being untied, and the bales rolled down on each side. They remain in this cramped posture, with their belly couched upon the earth, and sleep in the midst of their baggage, which is tied on again the next morning with as much readiness and facility as it was untied before they went to rest. These are, however, not their only inconveniences: they are prepared for all these evils by one still greater; by mutilating them by castration while young. They leave but one male for eight or ten females; and all the labouring Camels are commonly gelt: they are weaker, without doubt, than those which are not castrated; but they are more tractable than the others, who are not only indocile, but almost furious, in the rutting time, which remains forty days, and which happens every spring of the year. The female goes with young exactly a year, and, like all other large animals, produces but one at a birth. They have great plenty of milk, which is thick, and nourishing even for the human species, if it is mixed with more than an equal quantity of water. The females seldom do any labour while they are with young, but are suffered to bring forth at liberty. The profit which arises from their produce, and from their milk, perhaps surpasses that which is got from their labour; nevertheless, in some places, a great part of the females undergo castration, as well as the males, in order to render them more fit for labour. In general, the fatter the Camels are, the more capable they are of enduring great fatigues. Their hunches appear to be formed only from the superabundance of nourishment; for, in long journeys, where they are obliged to stint them in their food, and where they suffer both hunger and thirst, these hunches gradually diminish, and are reduced almost even; and the eminences are only discovered by the height of the hair, which is always much longer upon these parts than upon any other part of the back.

The young Camel sucks its mother a year: and when they want to bring him up so as to make him strong and robust, they leave him at liberty to suck or graze for a longer time, nor begin to load him, or put him to labour, till he has attained the age of four years. The Camel commonly lives forty or fifty years.

The Camel is not only of greater value than the elephant, but perhaps not of less than the horse, the ass, and the ox, all united together. He alone carries as much as two mules; he not only also eats less, but likewise feeds on herbs as coarse as the ass. The female furnishes milk a longer time than the cow; the flesh of young Camels is good and wholesome, like veal; their hair is finer, and more sought after than the finest wool; there is not a part of them, even to their excrements, from which some profit is not drawn; for sal ammoniack is made from their urine; their dung, when dried and powdered, serves them for litter, as it does for horses, with whom they often travel into countries where neither straw nor hay is known. In fine, a kind of turf is also made of this dung, which burns freely, and gives a flame as clear, and almost as lively, as that of dry wood; even this is another great use, especially in deserts, where not a tree is to be seen, and where, from the deficiency of combustible matters, fire is almost as scarce as water.

THE BUFFALO, THE AUROCHS, THE BISON, AND THE ZEBU.

ALTHOUGH the Buffalo is, at this present time, common in Greece, and tame in Italy, it was neither known by the Greeks nor Romans; for it never had a name in the language of these people. The word *buffalo* even indicates a strange origin, not to be derived either from the Greek or Latin tongues. In effect, this animal is originally a native of the hottest countries of Africa and India, and was not transported and naturalized in Italy till towards the seventh century. It is true, the ancients have spoken of an animal, as of a different species from the ox, under the name of *bubalus;* and Aristotle has mentioned the wild ox of Pæonia, which he has called *bonasus.* Both the ancients and moderns, however, have multiplied the species unnecessarily; and from attentive observation, I am clearly of opinion, that there are but two species which are essentially different, viz. the ox and the Buffalo.

We may observe, throughout the different regions of the world, the breed of oxen differing from each other in all external appearances, according to the nature of the climate, or other circumstances; but the most remarkable difference is that which divides them into two classes, viz. the *Aurochs*, or ox without a hunch on its back, and the *Bison*, or hunched ox. From indubitable facts, however, we have the utmost reason to conclude, that these are no other than varieties of the same species. The hunch, the length and quality of the hair, and the form of the horns, are the sole characters by which the Bison is distinguished from the Aurochs; but the hunched oxen couple and produce with our oxen; and we likewise know, that the length and quality of the hair, in all animals, depends on the nature of the climate; and we have remarked, that, in oxen, goats, and sheep, the form of the horns is various and fluctuating. These differences, therefore, do not suffice to establish two distinct species; and since our tame ox of Europe couples with the hunched ox of

India, we have the greatest reason to think that it would also couple with the Bison, or hunched ox of Europe. Notwithstanding this, however, we are not to be surprised, that the two kinds have not melted or coalesced into a mongrel breed, since many circumstances may have occurred to keep them asunder; and, in fact, we actually find that these kinds have subsisted till this present time, either in a free and wild, or in a tame state; and are scattered, or rather have been transported into all the climates of the earth. All the tame oxen without hunches have proceeded from the Aurochs, and all with hunches are issues of the Bison. In order to give a just idea of the varieties, we shall make a short enumeration of these animals, such as they are found actually to be in the different parts of the earth.

To begin with the north of Europe, the few oxen and cows which subsist in Iceland are without horns, although they are of the same kind as our oxen. The size of these animals is rather relative to the plenty and quality of pasture, than to the nature of the climate. The Dutch have often brought lean cows from Denmark, which fatten prodigiously in their meadows, and which give plenty of milk. These Danish cows are longer than ours. The oxen and cows of Ukraine, where there is excellent pasture, are said to be the largest in Europe; they are also of the same kind as our oxen.

The breed of Aurochs, or ox without a hunch, inhabits the cold and temperate zones. It is not very much dispersed towards the southern countries; on the contrary, the breed of the Bison, or hunched ox, fills all the southern provinces, at this present time. In the whole continent of India; the islands of the South Seas; in all Africa, from Mount Atlas to the Cape of Good Hope we find, I may say, nothing but hunched oxen; and it even appears, that this breed, which has prevailed in all the hot countries, has many advantages over the others. These hunched oxen, like the Bison, of which they are the issue, have the hair much softer and more glossy than our oxen, who, like the Aurochs, are furnished but with little hair, which is of a harsh nature. These hunched oxen are also swifter, and more proper to supply the place of a horse; at the same time, that they have a less brutal nature, and are not so clumsy and stupid as our oxen, they are more tractable, and sensible which way you would lead them. The regard the Indians have for these animals is so great, as to have almost degenerated into superstition. The ox, as the most useful animal, has appeared to them the most worthy of being revered; for this purpose, they have made an idol of the object of their veneration, a kind of beneficent and powerful divinity; for we are desirous of rendering all we respect, great and capable of doing much good, or much harm.

These hunched oxen, perhaps, vary again more than ours, in the colours of the hair, and the figure of the horns. The handsomest are all white, like the oxen of Lombardy; there are also some that are without horns; there are others who have them much elevated, and others so bent down, that they are almost pendent; it even appears, that we must divide this first kind of BISONS, or hunched oxen, into two secondary kinds, the one very large, and the other very small; and this last is that of the ZEBU; both have soft hair, and a hunch on the back. This hunch does not depend on the conformation of the spine, nor on the bones of the shoulder; it is nothing but an excrescence, a kind of wen, a piece of tender flesh, as good to eat as the tongue of an ox. The wens of some oxen weigh about forty or fifty pounds; others have them much smaller; some of these oxen have also prodigious horns for their size: there is one in the French King's cabinet, which is three feet and a half in length, and seven inches in diameter at the base. Many travellers affirm, they have seen them of a capacity sufficient to contain fifteen, and even twenty pints of water.

Thus all the southern parts of Africa and Asia are inhabited with hunched oxen, or Bisons, among which a great variety is to be met with in respect to size, colour, shape of the horns, &c. On the contrary, all the northern countries of these two parts of the world, and Europe entirely, comprehending even the adjacent islands, to the Azores, are only inhabited by oxen without a hunch, who derive their origin from the Aurochs. The Bison, or wild hunched ox, is stronger, and much larger than the tame ox of India; it is also sometimes smaller; but that depends only on the quantity of food. At Malabar, at Abyssinia, at Madagascar, where the meadows are naturally spacious and fertile, the Bisons are all of prodigious size. In Africa and Arabia Petræa, where the land is dry, the Zebus, or Bisons, are of the smallest stature.

Every part of South America is inhabited by oxen without hunches, which the Spaniards, and other Europeans, have successfully transported. These oxen are multiplied, and are only become smaller in these countries. In all the northern parts, as far as Florida, Louisiana, and even as far as Mexico, the Bisons, or hunched oxen, are to be found in great numbers. These Bisons, which formerly inhabited the woods of Germany, Scotland, and other of our northern countries, have probably passed from one continent to the other, and are become, like other animals, smaller in this new world; and as they are habituated to climates more or less cold, they have preserved their coat more or less warm; their hair is longer and thicker; the beard is longer at Hudson's Bay than at Mexico; and, in general, this hair is softer than the finest wool.

Thus the wild and the tame ox, the European, the Asian, the American, and the African ox, the bonasus, the Aurochs, the Bison, and the Zebu, are all animals of one and the same species, who, according to the climates, food, and different usage they have met with, have undergone all the variations we have before explained. The ox, as the most useful animal, is also the most universally dispersed. He appears ancient in every climate, tame among civilized nations, and wild in desert or unpolished countries; he supports himself by his own strength when in a state of nature, and has never lost the qualities which are useful to the service of man. The young wild calves which are taken from their mothers in India and Africa, have, in a short time, become as ractable as those which are the issue of the tame kind; and this natural conformity is another striking proof of the identity of the species.

If it be asked, which of the two kinds, the Aurochs or the Bison, claims the first place? It appears to me, that a satisfactory answer may be drawn from the facts we have just laid down. The hunch or wen of the Bison is probably no other than an accidental charac ter, which is defaced and lost in the mixture of the two kinds. The Auroch, or ox without a hunch, then, is the most powerful and predominant of the two; for, if it was the contrary, the hunch, instead of disappearing, would extend and remain upon every one of this mixed breed. What confirms and proves still more the identity of the species of Bison and Aurochs, is, that the Bisons, or hunch-backed oxen, in the north of America, have so strong a smell, that they have been called *Musk Oxen* by the greatest number of travellers; and, at the same time, we find, by the accounts of observing people, that the Aurochs, or wild ox of Prussia and Livonia, has the smell of musk, like the Bison ot America.

There remain, therefore, but two species, the **Buffalo** and the **Ox**, out of all the names placed at the head of this section; to each of which the ancient and modern naturalists have given a separate and distinct species. These two animals, although greatly resembling each other, both tame, and often living under the same roof, and fed in the same meadows, yet, when brought together, and even excited by their keepers, have ever refused to unite and couple together; their nature is more distant than that of the ass is from the horse; there even appears to be a strong antipathy between them; for it is affirmed, that cows will not suckle the young Buffaloes; and the female Buffalo refuses the same kindness to the other's calves. The Buffalo is of a more obstinate nature, and less tractable than the Ox; he obeys with great reluctance, and his temper is more coarse and brutal; like the hog, he is one of the filthiest of the tame animals, as he shows by his unwillingness to be cleaned and dressed; his figure is very clumsy, and forbidding; his looks stupidly wild; he carries his tail in an ignoble manner, and his head in a very bad posture, almost always inclined towards the ground; his voice is a hideous bellowing, with a tone much stronger and more hoarse than that of the bull; his legs are thin, his tail bare, and his physiognomy dark, like his hair and skin. He differs externally from the ox, chiefly in the colour of his hide; and this is easily perceived under the hair, with which he is but sparingly furnished; his body is likewise thicker and shorter than that of the ox; his legs

slender; the body is covered in many parts with long shaggy hair; the horns are short, rounded, and pointing outwards; and on the shoulders is a high protuberance, which is the distinctive mark of the Bison. This hunch is considered as a great delicacy by the Indians.

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who found one in the woods in the country above B gal, describes it as a bold and daring animal, and form as seeming to partake of the horse, the Bull, the deer. Some of the native princes are said to k Arnees for parade, under the name of fighting bulloc

THE ZEBU

The Zebu, or Barbary Cow, is somewhat like bison, having a hump o houlde forty pounds in weight. ey are often horses, and are also u ed in drawing ch &c. Instead of a bit, a ring or small through the cartilage of the nostrils, wl is larger cord, and serves as a bridle.

CHAPTER XVII.

Of the Moufflon, and other Sheep—The Axis—The Tapir—The Zebra—The Zebra of the Plains—The Hippopotamus—The Elk, and Rain-deer—The Malayan Rusa Deer.

THE MOUFFLON, OR ARGALI, AND OTHER SHEEP.

The breed of Sheep, though perhaps originally all of the same species, yet are found to be very different in different countries. Our domestic Sheep is only to be met with in Europe, and some of the most temperate provinces of Asia, and if transported into Guinea, loses its wool, and is covered with hair. It increases there but little, and its flesh has no longer the same taste: it cannot also subsist in cold countries.

In Iceland, a breed of Sheep is to be found, who have many horns, short tails, harsh and thick wool, under which, as in almost every animal in the north is a second lining, of a softer, finer, and thicker wool. These animals are sometimes wintered in stables, but are generally left to provide for themselves in the open plains. Caves are their retreats in stormy weather

but when they cannot reach such places of shelter, and are involved in falls of snow, they place their heads near each other, with their muzzles downward towards the ground. In this situation they will remain for several days, and hunger will sometimes compel them to gnaw each other's wool. They yield from two to six quarts of milk a day. Their wool is not shorn, but loosens of itself about the end of May, and is then stripped off at once like a skin.

In warm climates, some are covered with wool, others with hair, and a third kind with hair mixed with wool. The first kind of Sheep of those countries is that commonly called the Barbary or Arabian Sheep, which entirely resembles the tame kind, excepting in the tail, which is very much loaded with fat, is often more than a foot broad, and weighs upwards of twenty pounds. As for external appearance, this Sheep has nothing remarkable but the tail, which he carries as if a pillow was fastened to his hinder parts. Among this kind of broad-tailed Sheep, there are some whose tails are so long and heavy, that the shepherds are obliged to fasten a small board with wheels, in order to support them as they walk along. This tail, which is a substance between marrow and fat, is considered as a great delicacy. In the Levant, these Sheep are clothed with a very fine wool. In the hotter countries, as Madagascar and India, they are clothed with hair. The superabundance of fat, which in our Sheep fixes upon the reins, in these Sheep descends under the vertebræ of the tail; the other parts of the body are less charged with it than in our fat Sheep. This variety is to be attributed to the climate, the food, and the care of mankind; for these broad, or long-tailed Sheep, are tame, like those of our country; and they even demand much more care and management. This breed is much more dispersed than ours; they are commonly met with in Tartary, Thibet, Turkey, Persia, Syria, Egypt, Barbary, Ethiopia, and Madagascar; and even as far as the Cape of Good Hope. In Thibet, their fleeces, which are very fine, are manufactured into shawls.

THE STREPSICEROS.

In the islands of the Archipelago, and chiefly in the island of Candia, there is a breed of Sheep of which

Bellon has given the figure and description, under the name of *Strepsiceros*. This Sheep is of the make of our common Sheep: it is, like that, clothed with wool, and only differs from it by the horns, which are larger and rise upwards, but are twisted into spirals. The distance between the horns of the Ewe enlarges towards their tops; those of the Ram are parallel. This animal, which is commonly called the Wallachian Sheep, is frequent in Austria and Hungary, where its name is Zackl.

THE AFRICAN SHEEP.

In the hottest countries of Africa and India, there is a breed of large Sheep, which has rough hair, short horns, hanging ears, and a kind of tuft under the tail. Leo Africanus, and Marmol, call it *adamain;* and it is known to the naturalists by the names of the *Senegal Ram*, the *Guinea Ram*, and the *Angola Sheep*, &c. He is tame like ours, and, like him, subject to variety. These, though different in themselves by particular characters, resemble each other so much in other respects, that we can scarcely doubt but they are of the same kind.

A specimen of the male African Sheep is now in the Tower menagerie, to which it was presented about six years ago by Lord Liverpool. In temper it is extremely mild; but it is an uncouth looking creature. It is high on the legs, narrow in the loins, and its coat is rough and shaggy. Its horns are remarkably small, and within their curve the ears are enclosed. Whenever the ears escape from this seeming confinement, the animal exhibits much uneasiness; and, difficult as it is for him to replace them, he never rests till it is accomplished. On his back and sides he is nearly black; the shoulders are of a reddish brown; the posterior part of the body, the haunches, the hind legs, the tail, the nose, and also the ears, which are rather large, are white. There is likewise a white spot over each eye.

In considering, therefore, according to the difference of climate, the Sheep which are purely tame, we find.

1 The Sheep of the north, who have many horns and whose wool is rough and very thick; and the

but when they cannot reach such places of shelter, and are involved in falls of snow, they place their heads near each other, with their muzzles downward towards the ground. In this situation they will remain for several days, and hunger will sometimes compel them to gnaw each other's wool. They yield from two to six quarts of milk a day. Their wool is not shorn, but loosens of itself about the end of May, and is then stripped off at once like a skin.

In warm climates, some are covered with wool, others with hair, and a third kind with hair mixed with wool. The first kind of Sheep of those countries is that commonly called the Barbary or Arabian Sheep, which entirely resembles the tame kind, excepting in the tail, which is very much loaded with fat, is often more than a foot broad, and weighs upwards of twenty pounds. As for external appearance, this Sheep has nothing remarkable but the tail, which he carries as if a pillow was fastened to his hinder parts. Among this kind of broad-tailed Sheep, there are some whose tails are so long and heavy, that the shepherds are obliged to fasten a small board with wheels, in order to support them as they walk along. This tail, which is a substance between marrow and fat, is considered as a great delicacy. In the Levant, these Sheep are clothed with a very fine wool. In the hotter countries, as Madagascar and India, they are clothed with hair. The superabundance of fat, which in our Sheep fixes upon the reins, in these Sheep descends under the vertebræ of the tail; the other parts of the body are less charged with it than in our fat Sheep. This variety is to be attributed to the climate, the food, and the care of mankind; for these broad, or long-tailed Sheep, are tame, like those of our country; and they even demand much more care and management. This breed is much more dispersed than ours; they are commonly met with in Tartary, Thibet, Turkey, Persia, Syria, Egypt, Barbary, Ethiopia, and Madagascar; and even as far as the Cape of Good Hope. In Thibet, their fleeces, which are very fine, are manufactured into shawls.

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Sheep of the island of Gothland, Muscovy, and many other parts of the north of Europe, whose wool is thick, and who appear to be of the same breed.

2. Our Sheep, whose wool is very good and fine in the mild climates of Spain and Persia, but in hot countries changes to a rough hair. We have already observed, this conformity in this influence of the climates of Spain and Khorasan, a province of Persia, on the hair of cats, rabbits, hares, &c. It acts in the same manner upon the wool of Sheep, which is very fine in Spain, and still finer in this part of Persia.

3. The broad-tailed Sheep, whose wool is also very fine in temperate countries, such as Persia, Syria, and Egypt; but which, in hot countries, changes into a hair more or less rough.

4. The Sheep *strepsiceros*, or Cretan Sheep, who resemble ours both in wool and make, excepting the horns, which are straight and furrowed.

5. The *adimain*, or the great Sheep of Senegal and India, which in no part is covered with wool, but, on the contrary, is clothed with hair, which is longer or shorter, rougher or smoother, according to the heat of the climate. All these Sheep are only varieties of one and the same species, and certainly would unite one with the other, since the goat, whose species is farther distant, procreates with our Sheep, as we are assured from experience. But none of these tame Sheep have the characters of an original species.

THE MOUFFLON.

In Kamtschatka, in the mountains of Greece, in the islands of Cyprus, Sardinia, Corsica, and the deserts of Tartary, the animal which we call the *moufflon*, or *argali*, is still to be found. It appears to us to be the primitive stock of all Sheep. He lives in a state of nature, and subsists and multiplies without the help of man; he resembles the several kinds of tame Sheep more than any other animal; he is livelier, stronger, and swifter than they are; his head, forehead, eyes, and face are like the Ram's; he resembles him also in the form of the horns, and in the whole habit of body. In short, he procreates with the tame Sheep, which alone is sufficient to demonstrate that he is of the same species, and the primitive stock of the ferent breeds.

The only disagreement betwixt the Moufflon our Sheep, is, that the first is covered with hair inst d of wool; but we have observed that, even in ta e Sheep, the wool is not an essential character, bu a production of a temperate climate. Hence, it is astonishing that the original, or primitive and w Sheep, who has endured cold and heat, lived and creased, without shelter, i woods, is not cov with wool, which he would soon be deprived of an the thickets and thorny bushes. Besides, when a goat is coupled with a tame Sheep, the producti kind of wild Moufflon, a Lamb covered with hai not a barren mule, but a mongrel, which returns original species, and which appears to indicate our goats and tame Sheep have something common to them both in their origin.

The general colour of the Moufflon is brown, approaching to that of the red deer: but the inside of the thighs, and the belly, are of a white, tinctured with yellow. On the neck are two pendant hairy dewlaps. The horns of the old Rams frequently grow to such a size as to weigh sixteen or eighteen pounds each. The Moufflon is a fleet, active, and acute smelling animal, and cannot be taken, or even shot, without extreme difficulty. Its flesh, however, is held in such estimation by the natives of Kamtschatka, that, to procure it, there is no toil or danger which they will not cheerfully encounter.

THE AXIS.

This animal being only known by the vague names of the *Hind* of *Sardinia*, and the *Deer* of the *Ganges*, we have thought it necessary to preserve the name which Belon has given to him, and which he borrowed from Pliny. The Axis is of the small number of ruminating animals who wear horns, like the stag. He has the shape and swiftness of the fallow-deer; but what distinguishes him from the stag and fallow-deer is, that his body is marked with white spots, elegantly disposed, and separated one from another, and that he is a native of hot countries (Hindostan, and particularly

Bengal); while the stag and the deer have their coat of a uniform colour, and are to be met with in greater numbers, in cold countries and temperate regions, than in hot climates.

The gentlemen of the Academy of Sciences have only given him the name of the ***Sardinian Hind,*** because, very probably, they received that name from the royal menagerie; but there is nothing indicated of this animal's being a native of Sardinia; no author has ever mentioned, that he exists in that island like a wild animal; but, on the contrary, we see, by examining authors, that he is found in the hottest countries of Asia.

We have already remarked, that there is no species which approaches so near to another, as that of the deer to the stag: nevertheless, the Axis appears to be an intermediate mixture between the two. He resembles the deer in the size of his body, the length of his tail, and his coat, which is the same during his whole life: he only essentially differs from that animal in his horns, which nearly resemble those of the stag. The Axis, therefore, may possibly be only a variety depending on the climate, and not a different species from the deer; for, although he is a native of the hottest countries of Asia, he supports, and easily multiplies in, that of Europe. There are many herds of them in the menagerie of Versailles; but it has never yet been observed, that they mix either with the deer or with the stags; and this is the cause of our presuming, that it was not a variety of one or the other, but a particular and mediate species between the two. It is a very mild and timid animal.

THE TAPIR, OR THE ANTA,

Is, with the exception of the horse, the largest animal in America, where living nature seems to be lessened, or rather has not had time to arrive at its greatest dimensions. The animals also of South America, which alone properly and originally belong to this New Continent, are almost all without defence, without horns, and without tails; their bodies and their limbs are unproportioned; and some, as the sluggish and crawling animals, &c. are of so miserable a nature, that they scarcely have the faculties of moving or of eating; they drag on a languishing life in the solitude of a desert, and cannot subsist in the inhabited world, where man and powerful animals would have soon destroyed them.

The Tapir is of the size of a small cow, or zebu, but without horns, and with a short naked tail; the legs are short and thick, and the feet have small black hoofs. The body is thick and clumsy, and the back somewhat arched, and the hair is of a dusky or brownish colour. On the short thick neck is a kind of bristly mane, which, near the head, is an inch and a half in length. His head is of a tolerable size, with roundish erect ears, and small eyes, and the muzzle terminates in a kind of proboscis, which can be extended or contracted at the will of the animal. The latter it uses in feeding, to grasp its food and convey it to the mouth, in the same way that the rhinoceros applies its upper lip; and in this are also contained the organs of smell. He has ten incisive teeth, and ten grinders, in each jaw; a character which separates him entirely from the ox, and other ruminating animals. His skin is so thick and hard as to be almost impenetrable to a bullet; for which reason the Indians make shields of it.

The Tapir seldom stirs out but in the night, and delights in the water, where he oftener lives than upon land. He is chiefly to be found in marshes, and seldom goes far from the borders of rivers or lakes. He swims and dives with singular facility. When he is threatened, pursued, or wounded, he plunges into the water, and remains there till he has got to a great distance before he reappears. These customs, which he has in common with the hippopotamus, have made some naturalists imagine him to be of the same species: but he differs as much from him in nature, as he is distant from him in climate. To be assured of this, there needs no more than to compare the description we have now recited, with that of the hippopotamus Although the Tapir inhabits the water, he does not feed upon fish; and, although his mouth is armed with twenty sharp and incisive teeth, he is not carnivorous: he lives upon sugarcanes, grasses, the leaves of shrubs, and various kinds of fruit; and does not make use of what Nature has armed him with against other animals

He is of a mild and timid nature, and flies from every attack or danger: when, however, he is cut off from retreat, he makes a vigorous defence against dogs and men. Its usual attitude is that of sitting on its rump like a dog; and its voice is a kind of whistle. The flesh is wholesome food. It may be tamed, and is then very gentle and docile. This animal is commonly found in Brazil, Paraguay, Guiana, and in all the extent of South America, from the extremity of Chili to New Spain.

A species of Tapir, which has recently been discovered, is very common in the island of Sumatra and the forests of Malacca. Its body is of a dirty white, while the head, legs, and tail are of a deep black. This species has no mane, and its proboscis is from seven to eight inches long.

Among the numerous fossil remains of a former world are found fragments of Tapirs of enormous size. One of these extinct species, the Gigantic Tapir, must have been more than equal to the elephant in magnitude.

THE ZEBRA

Is, perhaps, the handsomest and most elegantly clothed of all quadrupeds. He has the shape and graces of the horse, the swiftness of the stag, and a striped robe of black and white alternately disposed with so much regularity and symmetry, that it seems as if Nature had made use of the rule and compass to paint it. These alternate bands of black and white are so much the more singular, as they are straight, parallel, and very exactly divided, like a striped stuff; and as they, in other parts, extend themselves not only over the body, but over the head, the thighs, the legs, and even the ears and the tail; so that, at a distance, this animal appears as if he was surrounded with little fillets, which some person had disposed, in a regular manner, over every part of the body. In the females, these bands are alternately black and white; in the male, they are brown and yellow, but always of a lively and brilliant mixture, upon a short, fine, and thick hair; the lustre of which still more increases the beauty of the colours. The Zebra is, in general, less than the horse, and larger than the ass; and, although it has often been compared to those two animals, and c the *Wild Horse*, and the *Striped Ass*, it is a neither of the one nor the other, and might rath called their model, if all was not equally original in Nature, and if every species had not an equal right to creation.

The Zebra is not the animal the ancients have indicated under the name *onagra*. There exists in the Levant, the eastern parts of Asia, and in the northern parts of Africa, a beautiful race of asses, who e finest horses, are natives of Arabia. This e from the common, by the size of the body, t der-ness of the legs, and the lustre of the hair; they are of a uniform, but commonly of a fine mouse colour, with a black cross upon the back and the shoulders; and sometimes they are of a bright gray colour, with a flaxen cross. The Zebra is also of a different climate from the onagra, and is only to be met with in the most eastern and the most southern parts of Africa, from Ethiopia to the Cape of Good Hope, and thence to Congo; it exists neither in Europe, Asia, nor America, nor even in all the northern parts of Africa: those which some travellers tell us they have seen at the Brazils have been transported thither from Africa; those which others are recounted to have seen in Persia, and in Turkey, have been brought from Ethiopia; and, in short, those that we have seen in Europe are almost all from the Cape of Good Hope. This point of Africa is their true climate, their native country, and where the Dutch have employed all their care to subject them and to render them tame, without having been hitherto able to succeed. That which we have seen, and which has served for the subject of our description, was very wild when he arrived at the royal menagerie in France; and he was never entirely tamed: nevertheless, he has been broken for the saddle; but there are precautions necessary: two men held the bridle, while a third was upon him. His mouth is very hard; his ears so sensible, that he winces whenever any person goes to touch them. He was restive, like a vicious horse, and obstinate as a mule; but, perhaps, the wild horse and the onagra are not less intractable; and there is reason to believe, that if the Zebra was accustomed to obedience and tameness from his earliest years he would become as mild as the ass and the horse, and might be substituted in their room.

The Zebra is chiefly found in the southern parts of Africa; often seen near the Cape of Good Hope; and a penalty of fifty rix-dollars is inflicted on any person who shoots one of them. Such of them as are caught alive are presented to the governor. Several have been brought to England, but, except in one instance, they have all displayed great wildness, and even ferocity. The exception was in that which was burnt some years ago at Exeter 'Change. It would allow young children to be put upon its back, and was once ridden from the Lyceum to Pimlico; but it was bred and reared in Portugal, from parents half reclaimed. In several other cases, Zebras have attempted to injure spectators, and have not even spared their keepers. The voice of this creature is thought to have a distant resemblance to the sound of a post horn.

THE ZEBRA OF THE PLAINS.

The Zebra which we have just described is confined to the mountains; the subject of the present article inhabits the flat parts near the Cape. Till very recently, the difference between them was not accurately understood. "The ground colour of its whole body (says Mr. Bennett) is white, interrupted by a regular series of broad black stripes extending from the back across the sides, with narrower and fainter ones intervening between each. Over the haunches and shoulders these stripes form a kind of bifurcation, between the divisions of which there are a few transverse lines of the same colour; but these suddenly and abruptly cease, and are not continued on the legs, which are perfectly white. Along the back there is a narrow longitudinal line, bordered on each side with white. The mane is throughout broadly and deeply tipped with black, and is marked by a continuation of the transverse bands of the neck. The lines of the face are narrow and beautifully regular; from the centre of the forehead they radiate downwards over the eyes; along the front of the muzzle they are longitudinal, the outer ones having a curve outwards; and on the sides they form broader transverse bands. From the confluence of these bands on the extremity of the muzzle, the nose, and the lo lip, those parts become of a nearly uniform black brown. The tail is white: there is no 'ongitudi ventral line: and a large black patch occupies the p terior part of the ear, near the tip. The hoofs moderately large, deep in front, shallow behind, much expanded at their margin."

The subject of the present article, which has n been about two years in the Menagerie, will suffe boy to ride her about the yard, and i to run loose through the Tower, with whom she does not attempt to quit the Canteen, where she is occasiona draught of ale, of which she is parti

THE HIPPOPOTAMUS.

Although this animal has been celebrated from the earliest ages, it was, notwithstanding, but imperfectly known to the ancients. It was only towards the sixteenth century that we had some precise indications on the subject.

In comparing the descriptions which we have observed in different travellers, the Hippopotamus appears to be an animal whose body is longer and thicker than that of the rhinoceros; but his fore-legs are much shorter. His head is short, and thick in proportion to the body. He has no horns, neither on the nose, like the rhinoceros, nor on the head, like ruminating animals. His cry, when hurt, approaches as near to the neighing of the horse, as the bellowing of the buffalo; but his usual voice resembles the neighing of a horse, from which, however, he differs in every other respect; and this fact, we may presume, has been the sole reason for giving him the name of *Hippopotamus*, or *River Horse;* as the howling of the lynx, which resembles that of the wolf, has occasioned him to be called the *stag-like wolf.* The incisive teeth of the Hippopotamus, and especially the two canine teeth of the lower jaw, are very long, very strong, and of so hard a substance, that they strike fire with a piece of iron. This is probably what has given rise to the fable of the ancients, who have reported that the Hippopotamus vomited fire. These canine teeth of this animal are of white, so clear and so hard, that they are preferable to ivory for making artificial teeth. The incisive teeth of the Hippopotamus, especially those of the lower jaw, are very long, cylindrical, and furrowed. The canine teeth, which are also very long, are crooked, prismatic, and sharp, like the tusks of a boar. The molares are square, or rather longer on one side than the other nearly like the grinders of a man, and so thick, that a single one weighs more than three pounds. The largest of the incisive, or the canine teeth, are twelve, and even sixteen inches in length, and sometimes weigh twelve or thirteen pounds each. The skin is in some parts two inches thick; and the Africans cut it into whip thongs, which, in consequence of their softness and pliability, they prefer to those procured from the rhinoceros hide.

The male Hippopotamus is about six feet nine inches long, from the extremity of the muzzle to the beginning of the tail; fifteen feet in circumference, and six feet and a half in height. His legs are about two feet ten inches long; the length of the head, three feet and a half, and eight feet and a half in circumference; and the width of the mouth, two feet four inches. It, however, sometimes acquires much greater magnitude. In the south of Africa, M. le Vaillant killed one which measured ten feet seven inches in length, and about nine feet in circumference.

Thus powerfully armed, with a prodigious strength of body, he might render himself formidable to every animal; but he is naturally gentle, and appears never to be the aggressor, except when annoyed or wounded. It has been erroneously stated, that he commonly moves slowly on the land, but, on the contrary, when he has been injured, he has been known to pursue persons for several hours, who escaped with great difficulty. He swims quicker than he runs, pursues the fish, and makes them his prey. Three or four of them are often seen at the bottom of a river, near some cataract, forming a kind of line, and seizing upon such fish as are forced down by the violence of the stream He delights much in the water, and stays there as willingly as upon land; notwithstanding which, he has no membranes between his toes, like the beaver and otter and it is plain, that the great ease with which he swims is only owing to the great capacity of his body, w only makes bulk for bulk, and is nearly of an e weight with the water. Besides, he remains a time under water, and walks at the bottom as we he does in the open air. When he quits it to graze on land, he eats sugarcanes, rushes, millet, rice, rc &c. of which he consumes and destroys a great q tity, and does much injury to cultivated lands; bu he is more timid upon earth than in the water, h very easily driven away; and, as his cannot save himself well by flight, if h iro water. His resource when he finds hir in d is to plunge himself into the water, and tance before he reappears. He comm from his pursuers; but if he is wounded, he bec irritated, and immediately facing about with great fury, rushes against the boats, seizes them with his teeth, often tears pieces out of them, and sometimes sinks them under water. "I have seen," says a traveller, "a Hippopotamus open his mouth, fix one tooth on the side of a boat, and another to the second plank under the keel; that is, four feet distant from each other, pierce the side through and through, and in this manner sink the boat to the bottom. I have seen another, lying by the side of the seashore, upon which the waves had driven a shallop heavily laden, which remained upon his back dry, and which was again washed back by another wave, without the animal appearing to have received the least injury. When the Negroes go a fishing in their canoes, and meet with a Hippopotamus, they throw fish to him; and then he passes on, without disturbing their fishery any more. He injures most when he can rest himself against the earth; but, when he floats in the water, he can only bite. Once, when our shallop was near shore, I saw one of them get underneath it, lift it above water upon his back, and overset it with six men who were in it; but fortunately they received no hurt."

"We dare not," says another traveller, "irritate the Hippopotamus in the water, since an adventure happened, which was near proving fatal to three men. They were going in a small canoe, to kill one in a river where there was about eight or ten feet water. After they had discovered him walking at the bottom, according to his custom, they wounded him with a long lance, which so greatly enraged him, that he rose immediately to the surface of the water, regarded them with a terrible look, opened his mouth, and, at one bite, took a great piece out of the side of the canoe, and had very nearly overturned it; but he replunged, almost directly, to the bottom of the water."

These animals are only numerous in some parts of the world: it even appears, that the species is confined to particular climates, and seldom to be met with but in the rivers of Africa. Dutch travellers say that they bear three or four young ones; but this appears very suspicious; as the Hippopotamus is of an enormous bulk, he is in the class of the elephant, the rhinoceros, the whale, and all other great animals, who bring forth but one; and this analogy appears more certain than all the testimonies that they have exhibited. The female brings forth her young upon land, and the calf, at the instant when it comes into the world, will fly to the water for shelter if pursued; a circumstance which Thunburg notices as a remarkable instance of pure instinct.

THE ELK AND THE RAIN-DEER.

Although the Elk and the Rain-deer are two animals of a different species, we have thought proper to unite them, because it is scarcely possible to write the history of the one, without borrowing a great deal from the other.

It appears by positive testimonies, that the Rain-deer formerly existed in France, at least in the high mountains, such as the Pyrenean, and, since that time, has been destroyed like the stags, who were heretofore common in that country.* It is certain that the Rain-deer is now actually to be found only in the most northern countries; we also know, that the climate of France was formerly much more damp and cold, occasioned by the number of woods and morasses, which are no longer to be seen. Gaul, under the same lati-

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*This assertion has recently been discovered to be incorrect. It is founded on a misprint in a Treatise on Hunting, by Gaston de Foix. The printed copies say that the writer had seen the Rain-deer in "*Maurienne* and *Pueudere*," that is. in Savoy and Bearn; but the MS., which M. Cuvier has since consulted, says 'Nourvègue and Xuedène," which means Norway and Sweden.

tude as Canada, was, two thousand years ago, what Canada is at this present time; that is, a climate cold enough for those animals to live in.

The Elk and the Rain-deer, then, are only found in the northern countries; the Elk on this, and the Rain-deer on the other side of the polar circle in Europe and in Asia. We find them in America in the highest latitudes, because the cold is greater there than in Europe. The Rain-deer can bear even the most excessive cold. He is found in Spitsbergen; he is common in Greenland, and in the most northern parts of Lapland: thus also, in the most northern parts of Asia, the Elk does not approach so near the pole; he inhabits Norway, Sweden, Poland, Russia, and all the provinces of Siberia and Tartary, with the north of China. We again find him by the name of *original*, and the Rain-deer under that of *caribou* in Canada, and in all the northern parts of America.

We may form a sufficiently just idea of the Elk and the Rain-deer, by comparing them with the stag. The Elk is larger, stronger, and stands more erect upon his legs; his neck is shorter, his hair longer, and his antlers wider and heavier than those of the stag; the Rain-deer is shorter and more squat; his legs are shorter and thicker, and his feet wider; the hair very thickly furnished, and his antlers much longer, and divided into a greater number of branches, with flat terminations; while those of the Elk are only (if the expression is allowed) cut or broached at the edges; both have long hair under the neck, and both have short tails, and ears much longer than the stag; they do not leap or bound like the roe-bucks; but their pace is a kind of trot, so easy and quick, that they go over almost as much ground, in the same time as the stags do, without being so much fatigued; for they can trot in this manner for a day or two. The Rain-deer lives upon the mountains; the stag only dwells in low lands and damp forests; both go in herds, like the stags, and both can be easily tamed, but the Rain-deer with greater ease than the Elk; the last, like the stag, has not lost his liberty, while the Rain-deer is become domestic among the enlightened part of mankind. The Laplanders have no other beast. In this icy climate, which only receives the oblique rays of the sun, where there is a season of night as well as day, where the snow covers the earth from the beginning of autumn to the end of spring, and where the verdure of the summer consists in the bramble, juniper, and moss, could man form any idea but of famine? The horse, the ox, the sheep, all our useful animals, find no subsistence there, nor can resist the rigour of the cold: he has been obliged to search among the inhabitants of the forest, for the least wild and most profitable animals. The Laplanders have done what we ourselves should do, if we were to lose our cattle: we should then be obliged to tame the stags and the roe-bucks of the forests, to supply their place; and I am persuaded we should gain our point, and we should presently learn to draw as much utility from them as the Laplanders do from the Rain-deer. We ought to be sensible, by this example, how far Nature has extended her liberality towards us. We do not make use of all the riches which she offers us: the fund is much more immense than we imagine. She has bestowed on us the horse, the ox, the sheep, and all our other domestic animals, to serve us, to feed us, and to clothe us; and she has, besides, species in reserve, which would be able to supply this defect, and which would only require us to subject them, and to make them useful to our wants. Man does not sufficiently know what Nature can do, nor what can be done with her. Instead of seeking for what he does not know, he likes better to abuse her in what he does know.

In comparing the advantages which the Laplanders derive from the tame Rain-deer, with those which we derive from our domestic animals, we shall see that this animal is worth two or three of them: he is used, as horses are, to draw sledges and other carriages; he travels with great speed and swiftness; he easily goes a hundred miles a day, and runs with as much certainty upon frozen snow as upon the mossy down. The female affords milk more substantial, and more nourishing than that of the cow; the flesh is very good to eat; his coat makes an excellent fur; and his dressed hide becomes a very supple and very durable leather. Spoons are also made of his bones, bowstrings and thread of his tendons, and glue is manufactured from his horns. Thus the Rain-deer alone affords all that we derive from the horse, the ox, and the sheep.

With from three to five hundred Deer, a Laplander can live in tolerable comfort; with two hundred he may, by management, contrive to get on; but with a hundred his subsistence is precarious; and with only fifty, he must be content to be the partner, or rather servant, of some more fortunate individual.

The antlers of the Rain-deer are larger, more extended, and divided into a greater number of branches than those of the stag. His food, in the winter season, is a white moss (the *lichen rangeferinus*), which he finds under the snow, and which he ploughs up with his horns, or digs up with his feet. When the snow is too deep for them to obtain this article, they resort to another lichen that hangs on pine trees; and in severe seasons the boors often cut down some thousands of these trees to furnish subsistence to their herds.

In summer, he lives upon the buds and leaves of trees, rather than herbs, which his forward-spreading antlers will not permit him to brouse on with facility. He runs upon the snow, and sinks but little, on account of his broad feet. These animals are mild; and they bring them up in herds, which turns out greatly to the profit of their keepers. The richest Laplanders have herds of four or five hundred head of Rain-deer, and the poor have ten or twelve. They lead them to pasture, and relead them to the stable, or shut them up in parks during the night, to shelter them from the outrages of the wolves. If they attempt to change their climate, they die in a short time. Formerly Steno, prince of Sweden, sent six to Frederick, duke of Holstein; and, of later date, in 1533, Gustavus, king of Sweden, had ten brought over to Prussia, both males and females: all perished, without producing any young, either in a domestic or in a free state. Many fruitless attempts have been made to introduce them into England. There is, however, at present in the Zoological Gardens one specimen, which was placed there in 1828, and appears to be still in a thriving condition.

There are both wild and tame Rain-deer in Lapland. In the time the heat is upon the tame females, they sometimes let them loose, to seek the wild males; and, as these wild males are more robust, and stronger than the tame, the issues of this mixture are preferred for harness. These Rain-deer are not so gentle as the others; for they not only sometimes refuse to obey those who guide them, but they often turn furiously upon them, and attack them with their feet, so that there is no other resource than to cover themselves from their rage by the sledge, until the fury of the beast is subsided. This sledge is so light, that they can easily manage it, and cover themselves with it. The bottom of it is lined with the skins of young Rain-deers; the hairy side is turned against the snow, so that the sledge glides easily forwards, and recoils less on the mountains. The harness of the Rain-deer is only a thong of the hide, with the hairs remaining on it, round the neck, whence it descends towards the breast, passes under the belly, between the legs, and is fastened to a hole which is in the forepart of the sledge. The Laplander has only a single cord by which to guide the animal, and which he throws indifferently upon the back of the beast, sometimes on one side, and sometimes on the other, according as he would direct him to the right or to the left.. They can travel ten miles an hour; and it is not uncommon for them to make journeys of a hundred and fifty miles in nineteen hours; at their utmost speed, and for a short time, they can accomplish nearly twenty miles within the hour; but the quicker the method of travelling is, the more it is inconvenient; a person must be well accustomed to it and travel often, to be able to direct the sledge, and prevent it from turning over. They can draw three hundred pounds, but the Laplanders usually limit the burthen to two hundred and forty pounds.

The Rain-deers have outwardly many things in common with the stags; and the formation of the interior parts is the same. The Rain-deer sheds his antlers every year like the stag, and, like him, is very good venison. The females, both of the one and the other species, go eight months with young, and produce but one at a birth. The young Rain-deer follows his mother during the first two or three years, and does not attain his growth till about the age of four or five.

It is at this age that they begin to dress and exe
them for labour.

The Rain-deers are all very spirited, and very
ficult to manage; they therefore make use onl
those which are castrated, among which they ch
the liveliest and the swiftest to draw their sledges,
the more heavy to travel with their provision and
gage at a slower pace. These animals are trou
with an insect, called the gad-fly, during the sum
season, which, burrowing under their
ceding summer, deposit their eggs; s
of the Rain-deer is often so filled with s
that an incurable disorder is brought on. So
dable are the attacks of these insects, that
July, and August, the Laplander is compelle
grate with his Deer from the forests to the mo
without which precaution he would run the of
losing the major part of his herd.

The herds of this species require a great deal of care. The Rain-deer are subject to elope, and voluntarily renew their natural liberty: they must be closely attended, and narrowly watched; they cannot lead them to pasture but in open places; and, in case the herd are numerous, they have need of many persons to guard them, to recall them, and to run after them if they stray. They are all marked, that they may be known again; for it often happens that they stray in the woods, or mix among another herd. In short, the Laplanders are continually occupied in the care of their Rain-deer, which constitute all their wealth.

The Rain-deer is the only animal of this species the female of which has horns like the male; and the only one also which sheds his horns, and renews them again, notwithstanding his castration; for, in stags, fallow-deer, and roe-bucks, who have undergone this operation, the head of the animal remains always in the same state in which it was the moment it was castrated.

Another singularity which we must not omit, and which is common to the Rain-deer and the Elk, is, that when these animals run, or quicken their pace, their hoofs, at every step, make a crackling noise, as if all the joints of their legs were disjointing. It is this noise, or perhaps the scent, which informs the wolves of their approach, who run out to meet and seize them; and, if the wolves are many in number, they very often conquer. The Rain-deer is able to defend himself against a single wolf, not, as may be imagined, with his horns (for they are rather of a disservice to him than of use), but with his fore feet, which are very strong, and with which he strikes with such force, as to stun the wolf, or drive him away; after which he flies with such speed, as to be no longer in any danger of being overtaken: but he finds a more dangerous, though a less frequent and less numerous enemy than the wolf, in the *rosomack*, or *glutton.*

The Elk and the Rain-deer are both among the number of ruminating animals.

A tame Rain-deer lives only to the age of fifteen or sixteen years; but it is to be presumed, that the life of the wild Rain-deer is of much longer duration. This animal, being four years before he arrives at his full growth, must live twenty-eight or thirty years, when he is in his natural state. The Laplanders hunt the wild Rain-deers by different methods, according to the difference of seasons. In rutting time, they make use of a tame female to attract them. They kill them by the musket, or with the bow and arrow, and draw the bow with such strength, that notwithstanding the thickness of the hair, and the firmness of the hide. they very often kill one of these beasts with a single arrow.

The mode in which the Dog-rib Indians kill the Rain-deer is curious. The hunters go in pairs, the foremost man carrying in one hand the horns and part of the skin of the head of a deer, and in the other a small bundle of twigs, against which he, from time to time, rubs the horns, imitating the gestures peculiar to the animal. His comrade follows, treading exactly in his footsteps, and holding the guns of both in a horizontal position, so that the muzzles project under the arms of him who carries the head. Both hunters have a fillet of white skin round their foreheads, and the foremost has a strip of the same round his wrists. They approach the herd by degrees, raising their legs very slowly, but setting them down somewhat suddenly, after the manner of a deer, and always taking care to lift their right or left foot simultaneously. If any of the herd leave off feeding to gaze upon this extraordinary phenomenon, it instantly stops, and the head begins to play its part by licking its shoulders, and performing other necessary movements. In this way the hunters attain the very centre of the herd, without exciting suspicion, and have leisure to single out the fattest. The hindmost man then pushes forward his comrade's gun, the head is dropped, and they both fire nearly at the same instant. The deer scamper off, the hunters trot after them: in a short time the poor animals halt, to ascertain the cause of their terror; their foes stop at the same moment, and, having loaded as they ran, greet the gazer with a second fatal discharge. The consternation of the deer increases; they run to and fro in the utmost confusion, and sometimes a great part of the herd is destroyed within the space of a few hundred yards.

In general, the **Elk** is much larger and a much stronger animal than the Stag and the Rain-deer. It is usually larger, both in height and bulk than the horse. His hair is so rough, and his hide so hard, that a musket ball cannot penetrate it. His legs are very firm, with so much motion and strength, especially in the fore feet, that he can kill a man by one single stroke of his foot; nevertheless, he is hunted nearly as we hunt the stag; that is, with men and dogs. It is affirmed, that, when he is touched with the lance, or pursued, it happens that he often falls down all at once, without either being pulled down or wounded. From this circumstance, some have presumed he was subject to the epilepsy; and on this presumption, which is not well founded (since fear alone might be able to produce the same effect,) this absurd consequence has been drawn, that his hoof is a remedy for the epilepsy, and even preserves persons from it. His pace, when disturbed, is a rapid kind of trot. In walking he lifts his feet very high, and can, without difficulty, step over a gate that is five feet high.

As there are very few people in the northern parts of America, all animals, and particularly Elks, are in greater numbers than in the north of Europe. The savages are not ignorant of the art of hunting and taking them; they follow them by the track of their feet, very often for many days together, and by constancy and dexterity, they often gain their end Their method of hunting them in winter is particularly singular:—"They make use of rackets, or snow-shoes,' says Denys, "by means of which they walk upon the snow without sinking in. The *Orignal* does not cover a deal of ground, because of his sinking in the snow, which greatly fatigues him; he eats nothing but the young shoots of the trees during the whole year; therefore, where the savages find the trees eaten, they presently meet with the beasts, which they approach very easily. They throw a dart at them, which is a large club, at the end of which is fastened a large pointed bone, which pierces like a sword. If there are many Orignals in one troop, they drive them away; for then, the Orignals, placing themselves in a rank, describe a large circle of a mile and a half, or two miles, and sometimes more. They harden the snow so much with their feet in turning round, that they no longer sink in. The savages in America wait for their passing them, and then throw their darts, and kill them."

None of the deer tribe are so easily tamed as this animal, which is naturally gentle; and when he is once domesticated he manifests great affection for his master. In the state of New-York, a successful attempt has been made to employ Elks in the labours of agriculture. The Indians believe that there exists a gigantic Elk, which can walk without difficulty in eight feet of snow, is invulnerable to all weapons, and has an arm growing out of its shoulder, which it uses as we do ours. They consider him as the king of the Elks, and imagine that he is attended by numerous courtiers. With them the Elk is also an animal of good omen, and to dream of him often is looked upon as an indication of long life.

THE MALAYAN RUSA DEER.

This animal, to which his keepers give the name of the Samboo Deer, is a native of India and of the Indian islands. "He is (says Mr. Bennett) dark cinereous brown above, nearly black on the throat and breast, and light fawn, intermixed with dirty white, on the inside of the limbs. His eyes are surrounded by a fawn coloured disc, and patches of the same colour occupy the fore knees, and a space above each of the hoofs in front. His nose, which is black, is enveloped in an extensive muzzle; his ears are nearly naked on the inside, and marked by a patch of dirty white at the base externally; and his mane, which spreads downwards over the neck and throat, is remarkably thick and heavy. His tail is black above, and light fawn beneath; and a disc of the latter colour occupies the posterior part of the buttocks, having on each side a blackish line which separates it from the lighter tinge of the inside of the thighs. His horns, when properly grown, consist of a broad burr, from which the pointed basal antler rises almost perpendicularly to the extent of nine or ten inches; of a stem, which is first directed outwards, and then forms a bold curve inwards; and of a snag, or second antler of smaller size, arising from the stem near its extremity on the posterior and internal side, and forming with it a terminal fork, the branch, however, being shorter than the stem, and not exceeding five or six inches in length. The entire length of the horns is about two feet; they are of a dark colour, very strong, and deeply furrowed throughout.

"The foregoing description of the horns, it should be observed, is taken from those of the year before last, which were of the genuine or normal form. Those of the last year, were, from some cause or other, remarkably different, that of the right side exhibiting a singular monstrosity in the production of additional branches of irregular form. Whether this was the effect of disease, or of advancing age, or whether it arose solely from some accidental and temporary cause, will probably be determined by the growth of the present year, which is not yet sufficiently advanced to enable us to ascertain the probable form."

When first brought to England, the individual ranged at liberty, with another of the same species, in the great park at Windsor. So violent, however, were their quarrels, that it was found necessary to separate them, and this was consigned to the Tower. He is now exceedingly tame.

CHAPTER XVIII.

Of the Ibex, the Chamois, and other Goats—The Saiga—The Antelope, or Gazelle—Of the Bezoar Stone—Of the Bubalus, or Stag-like Antelope—The Condoma, or Striped Antelope—The Guib, or Harnessed Antelope—The Grimm—The Indian Antelope—The Chevrotins—The Mazame, and Tememazame—The Coudous—The Gnu—The Nyl-ghau—The Musk—The Production of that Perfume.

THE IBEX, THE CHAMOIS, AND OTHER GOATS.

Although it appears that the Greeks were acquainted with the Ibex and the Chamois, yet they have not described them by any particular denomination, nor even by characters sufficiently exact for them to be distinguished: they have only indicated them under the general name of *Wild Goats.** They probably presumed, that these animals were of the same species as the domestic Goats, as they have not given them proper names, as they have done to every other different species of animals; on the contrary, all our modern naturalists have regarded the Ibex and the Chamois as two real and distinct species, and both of them different from that of our Goats.

The male Ibex differs from the Chamois, by the length, the thickness, and the form of the horns; it is also much more bulky, vigorous, and strong. The female Ibex has horns different from the male; they are also much smaller, and nearly resembling those of the Chamois. In other respects, these two animals have the same customs, the same manners, and the same country; only the Ibex, as he is endowed with more agility, and is stronger than the Chamois, climbs to the summit of the highest mountains; while the Chamois only lives in the second stage; but neither the one nor the other is to be found in the plains; both make their way on the snow; both ascend precipices by bounding from rock to rock; both are covered with a firm and a solid skin, and clothed, in winter, with a double fir, with very rough hair outwardly, and a finer and thicker hair underneath; both of them have a black stripe on the back, and both likewise have the tail nearly of the same size. The number of exterior resemblances is so great, in comparison with the differences, and the conformity of the exterior parts is so complete, that if we reason in consequence of these accounts, we might be led to believe, that these two animals are not really of a different species, but that they are simply only constant varieties of one and the same species. The Ibex, as well as the Chamois, when taken young and brought up with domestic Goats, are easily tamed; and, accustomed to domesticity, imbibe the same manners, herd together, return to the stable, and probably procreate together. I avow, however, that this fact, the most important of all, and which alone would decide the question, is not known to us.

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*Later naturalists have formed the antelopes into a separate genus, intermediate between the goats and the deer. The Chamois is the *Antilope Rupicapra* of Linnæus and Pallas. The Ibex is a goat, the *Capra Ibex* of Linnæus.

Let us, nevertheless, take a view of the opposite reasons. The species of the Ibex and the Chamois both subsist in a state of nature, and both are constantly distinct. The Chamois sometimes comes, of his own accord, and joins the stock of our domestic sheep. The Ibex never joins them, at least not before it is tamed. The Ibex and the he Goat have a very long beard, and the Chamois has none at all; the male and female Chamois have very small horns; those of the male Ibex are so thick and long, that they would scarcely be imagined to belong to an animal of its size. The horns of the male Ibex are not very different from those of the Goat; as the female, however, approaches our Goat and even the Chamois in the size and smallness of the horns, may we not conclude, that these animals, the Chamois and the domestic Goat, are, in fact, but one and the same species, in which the nature of the females, is invariable and alike, while the males are subject to varieties, which render them different one from the other?

The Ibex, or wild Goat, entirely and exactly resembles the domestic Goat, in the conformation, the organization, and the natural and physical habits; it only varies by two slight differences; the one externally, and the other internally. The horns of the Ibex are longer than those of the he Goat; they have two longitudinal ridges; those of the Goat have but one; they have also thick knots, or transverse tubercles, which mark the number of years of their growth, while those of the Goats are only marked with transverse strokes. The Ibex runs as fast as the stag, and leaps lighter than the roebuck. All Goats are liable to vertigoes, which are common to them with the Ibex and the Chamois, as well as the inclination to climb up rocks; and still another custom, which is that of continually licking the stones, especially those which are strongly impregnated with saltpetre, or common salt. In the Alps there are rocks which have been hollowed by the tongue of the Chamois. These are commonly soft and calcinable stones, in which, as is well known, there is always a certain quantity of nitre. These natural agreements, these conformable customs, among other circumstances, appear to me to be sufficient indexes of the identity of species in these animals.

The Ibex and the Chamois, one of which I look upon as the male, and the other as the female stock of the Goat species, are only found, like the moufflon, which is the source of the sheep species, in deserts, and upon the most craggy places of the highest mountains: the Alps, the Pyrenees, the mountains of Greece, and those of the islands of the Archipelago, are almost the only places where the Ibex and the Chamois are to be found. But, although both these animals dislike heat, and only inhabit the region of snow and ice, yet they have also an aversion to excessive cold. In the summer, they choose the north of the mountains; in winter, they descend into the valleys; neither the one nor the other can support themselves on their legs upon the ice, when it is smooth; but, if there be the least inequalities on its surface, they bound along with security.

The chase of these animals is very troublesome, and dogs are entirely useless in it; it is likewise very dangerous to men; for sometimes the animal, finding itself hard pushed, turns and strikes the hunter, and precipitates him from the rock, unless he has time to lie down, and let the creature bound over him. If the pursuit be continued, this animal will throw himself down the steepest declivities, and fall upon his horns in such a manner as to escape unhurt.

M. Perond, surveyor of the crystal mines in the Alps, having brought over a living Chamois, has given us the following information on the natural habits of this animal:—"The Chamois is a wild animal, but easily tamed, and very docile. It is about the size of a domestic goat, and resembles one in many respects. It is most agreeably lively, and active beyond expression. Its hair is short, like that of the doe; in spring it is of an ash colour, and in winter of a blackish brown. The large males keep themselves apart from the rest, except in their rutting time. The time of their coupling is from the beginning of October to the end of November; and they bring forth in April and March. The young follows the dam for about five months, and sometimes longer, if the hunters, or the wolves, do not separate them. It is asserted that they live between twenty and thirty years. The flesh of the Chamois is good to eat; and some of the fattest afford ten or twelve pounds of suet, which far surpasses that of the goat in solidity and goodness.

The cry of the Chamois is not distinctly known; if it has any, it is but faint, and resembling that of a hoarse goat; it is by this cry it calls its young; but, when they are frightened, or are in danger of any enemy, or some other object not perfectly known to them, they warn the rest of the flock by a kind of hissing noise. It is observable, that the Chamois has a very penetrating eye, and its hearing and smell are not less distinguishing. When it finds an enemy near, it stops for a moment, and then in an instant flies off with the utmost speed. When the wind is in its favour, it can smell a human creature for more than half a mile distance. When this happens, therefore, and it cannot see its enemy, but only discovers his approach by the scent, it begins the hissing noise with such force, that the rocks and the forests reecho with the sound. This hissing continues as long as the breath will permit. In the beginning it is very shrill, and deeper towards the close. This animal then rests a moment, after this alarm, to inspect farther into its danger: and, having confirmed the reality of its suspicion, it commences to hiss by intervals, till it has spread the alarm to a great distance. During this time, it is in the most violent agitation, strikes the ground forcibly with its fore foot, and sometimes with both; it bounds from rock to rock, it turns, and looks round; it turns to the edge of the precipice, and when it has obtained a sight of the enemy, flies from it with all its speed. The hissing of the male is much more acute than that of the female; it is performed through the nostrils, and is, properly, no more than a very strong breath, forced through the nostrils by fixing the tongue to the palate, keeping the teeth nearly shut, the lips open, and a little lengthened. Their agility is wonderful, as they will throw themselves down, across a rock, which is nearly perpendicular, and twenty or thirty feet in height, without a single prop to support their feet. Their motion has, indeed, rather the appearance of flying than of leaping. The Chamois feeds upon the best herbage, and chooses the most delicate parts of plants, flowers, and the most tender buds. It is not less delicate with regard to several aromatic herbs, which grow upon the sides of the Alps. It drinks but very little, while it feeds upon the succulent herbage, and ruminates, like the goat, in the intervals of feeding. Its head is crowned with two small horns, of about half a foot long, of a beautiful black, and rising from the forehead, almost betwixt the eyes. These horns are often made use of for the heads of canes. The hides of these animals are very strong and supple, and good warm waistcoats and gloves are made of them.

The hunting of the Chamois is very laborious, and extremely difficult and perilous. It is thus admirably described by Saussure:—"The Chamois hunter sets out upon his expedition of fatigue and danger generally in the night. His object is to find himself at the break of day in the most elevated pastures, where the Chamois comes to feed before the flocks shall have arrived there. The Chamois feeds only at morning and evening. When the hunter has nearly reached the spot where he expects to find his prey, he reconnoitres with a telescope. If he finds not the Chamois, he mounts still higher; but if he discovers him, he endeavours to climb above him and to get nearer, by passing round some ravine, or gliding behind some eminence or rock. When he is near enough to distinguish the horns of the animal (which are small, round, pointed, and bent backward like a hook), he rests his rifle upon a rock, and takes aim with great coolness. He rar misses. This rifle is often double-barrelled. If Chamois falls, the hunter runs to his prey—mal sure of him by cutting the hamstrings—and appl himself to consider by what way he may best reg his village. If the route is very difficult, he conte himself with skinning the Chamois; but if the way s at all practicable with a load, he throws the anir over his shoulder, and bears it home to his fami undaunted by the dista ce he has to g cipices he has to cross.

"But when, as is more frequently the case, the vigilant animal perceives the hunter, he flies with the greatest swiftness into the glaciers, leaping with incredible speed over the frozen snows and pointed rocks. It is particularly difficult to approach the Chamois when there are many together. The sentinel, who is placed on the point of some rock which commands all the avenues of their pasturage, makes the sharp hissing sound already mentioned, at the sound of which all the rest run towards him, to judge for themselves of the nature of the danger. If they discover a beast of prey or a hunter, the most experienced puts himself at their head; and they bound along, one after the other, into the most inaccessible places.

"It is then that the labours of the hunter commence; for then, carried away by the excitement, he knows no danger. He crosses the snows, without thinking of the abysses which they may cover; he plunges into the most dangerous passes of the mountains; he climbs up, he leaps from rock to rock, without considering how he can return. The night often finds him in the heat of the pursuit; but he does not give it up for this obstacle. He considers that the Chamois will stop during the darkness, as well as himself, and that on the morrow he may again reach them. He passes then the night—not at the foot of a tree, nor in a cave covered with verdure, as does the hunter of the plain—but upon a naked rock, or upon a heap of rough stones, without any sort of shelter. He is alone, without fire, without light; but he takes from his bag a bit of cheese and some of the barley bread, which is his ordinary food—bread so hard that he is obliged to break it between two stones, or to cleave it with the axe which he always carries with him to cut steps which shall serve for his ladder up the rocks of ice. His frugal meal being soon ended, he puts a stone under his head, and is presently asleep, dreaming of the way the Chamois has taken. He is awakened by the freshness of the morning air; he rises, pierced through with cold; he measures with his eye the precipices he must yet climb to reach the Chamois; he drinks a little brandy (of which he always carries a small provision), throws his bag across his shoulder, and again rushes forward to encounter new dangers. These daring and persevering hunters often remain whole days in the dreariest solitudes of the glaciers of Chamouni; and, during this time, their families, and, above all, their unhappy wives, feel the keenest alarm for their safety.

" And yet, with the full knowledge of the dangers to be encountered, the chase of the Chamois is the object of an insurmountable passion. Saussure knew a handsome young man, of the district of Chamouni, who was about to be married; and the adventurous hunter thus addressed the naturalist: 'My grandfather was killed in the chase of the Chamois; my father was killed also; and I am so certain that I shall be killed myself, that I call this bag, which I always carry hunting, my winding-sheet. I am sure that I shall have no other; and yet, if you were to offer to make my fortune upon the condition that I should renounce the chase of the Chamois, I should refuse your kindness.' Saussure adds, that he went several journeys in the Alps with this young man; that he possessed astonishing skill and strength; but that his temerity was greater than either; and that, two years afterwards, he met the fate which he had anticipated, by his foot failing on the brink of a precipice to which he had leaped.

"The very few individuals of those who grow old in this trade, bear on their countenances the traces of the life which they have led. They have a wild, and somewhat haggard and desperate air, by which they may be recognised in the midst of a crowd. Many of the superstitious peasants believe that they are sorcerers; that they have commerce with the evil spirit; and that it is he that throws them over the precipices."

THE SAIGA.

There is a sort of wild goat found in Hungary, in Tartary, and in South Siberia, which the Russians call *Seigak*, or *Saiga*. It bears a resemblance to the domestic goat, in the shape of its body, and in its hair; but, by the shape of the horns, and the defect of the beard, it approaches nearer the *gazelle*, and appears to be a mixture of these two animals.

The Saiga, by its natural habits, resembles more the gazelle than the ibex and the chamois; for it does not delight in mountainous countries, but lives upon the hills and on the plains. It is very agile, very swift, and its flesh is much better eating than that of the ibex, or any other wild or tame goat.

This animal, which was imperfectly known to M. Buffon, is the *Scythian Antelope* of Pennant, the *Antilope Saiga* of Linnæus. It is of a gray yellowish colour, and about the size of a fallow-deer. Numbers of them are to be found in the dreary and extensive deserts about Mount Caucasus, the Caspian Sea, and in Siberia In autumn they collect together, and migrate towards the south; in spring they separate, and return to the north. Being exceedingly fond of salt, they confine themselves chiefly to such countries as have salt springs. Like the chamois, one of their herd acts as sentinel when the flock rests, and when he is tired he is relieved by another.

THE GAZELLE, OR ANTELOPE.

There have been thirteen species, or, at least, thirteen very distinct varieties, noted of these animals.* In this uncertainty, in knowing whether they are only varieties, or in fact really different species, we have thought proper to put them all together, assigning to each of them a particular name. The first is the common *Gazelle*, found in Syria, in Mesopotamia, and in all the other provinces of the Levant, as well as in Barbary and in all the northern parts of Africa. The horns of this animal are about a foot long, entirely annulated at the base, which lessen into half rings towards the extremity; they are not only surrounded with these rings, but also longitudinally furrowed by small streaks. The Gazelles in general, and this tribe in particular, greatly resemble the roebuck, in the proportions of the body, its natural functions, its swiftness, and the brightness and beauty of its eyes. These resemblances would tempt us to think that, as the roebuck does not exist where the Gazelle does, the latter was only a degeneration of the first; or, that the roebuck is only a Gazelle, whose nature is altered by the influence of the climate, and by the effect of the different food, did not the Gazelle differ from the roebuck in the nature and fashion of its horns; those of the roebuck, which may be said to be solid, fall off, and are renewed every year, like those of the stag; on the contrary, the horns of the Gazelle are hollow and permanent, like those of the goat: the roebuck has also no gall-bladder, which is to be found in the Gazelle, as well as in the goat: on the other hand, the Gazelles have, in common with the roebuck, deep pits under the eyes, and resemble it still more in the colour and quality of the hair in the bunches upon their legs, which only differ in being upon the fore legs of the Gazelle, and upon the hinder legs of the roebuck. The Gazelles, therefore, seem to be of a middle nature between the two animals; but when we consider that the roebuck is an animal which is to be found in both continents, and that the goats, on the contrary, as well as the Gazelles, do not exist in the New World, we shall easily perceive that these two species, the goat and the Gazelle, are more nearly related to each other than they are to the roebuck.

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* The number of species of this genus is now increased to fifty-two

The second Gazelle is an animal found in Senegal, and is called the *Kevel*. It is something less than the former, and nearly of the size of a small roebuck; it differs also in its eyes, which are much larger; and its horns, instead of being round, are flatted on the sides, as well in the male as in the female; in other respects, the Kevel entirely resembles the Gazelle.

The third animal is called the *Corin*, the name it bears in Senegal. It greatly resembles the Gazelle and the Kevel, but is still less than either; its horns also are much smaller and smoother than those of the other two; and the annular prominences belonging to this kind are scarcely discernible.

In the Royal Cabinet of France, there are skins of these three different Gazelles; besides which, is a horn which bears a great resemblance to those of the Gazelle and Kevel, and only differs from them in being much thicker. Its thickness and length seem to indicate a much larger animal than the common Gazelle; and it appears to us to belong to a Gazelle which the Turks call *Tzeran*, and the Persians *Atur*. This animal, according to Olearius, in some measure resembles our deer, except that it is rather of a red colour than brown; the horns likewise are without antlers, and rest upon the back, &c. Mr. Gmelin, who describes it under the name of *Doheren*, says it resembles the roebuck, with this exception, that the horns are, like those of the ibex, hollow, and, like them never fall off.

To the four first species or tribes of Gazelles, must be added two other animals, which resemble them in many things. The first is called *koba* at Senegal, where the French have styled it the *great brown cow*. The second, which we call the *kob*, is also an animal of Senegal, which the French have denominated the *small brown cow*. The horns of the kob greatly resemble those of the Gazelle and the kevel: but the shape of the head is different; the muzzle is much longer, and there are no pits nor depressions under the eyes.

The seventh animal of this kind is a Gazelle which is found in the Levant, but more commonly in Egypt and in Arabia. It is called, from its Arabian name, *Algazelle;* it is shaped pretty much like the other Gazelles, and is nearly of the size of a deer; but its horns are long, small, and but little rounded till towards the extremity, when they turn short with a sharp flexure; they are black, and almost smooth, and the annular prominences scarcely observable, except towards the base, where they are a little more visible. They are about three feet in length, while those of the Gazelle are commonly but one foot, those of the kevel fourteen and fifteen inches, and those of the corin (which nevertheless resembles this the most) only six or seven inches.

The eighth animal is that which is vulgarly called the *Bezoar Gazelle*, but by the eastern nations *Pasan*, which name we retain. This Gazelle is of the size of our domestic he-goat; and it has the hair, shape, and agility of the stag. In most respects, these two species, the *Algazelle* and the *Pasan*, appear to us to have a great affinity. They are also natives of the same climate, and found in the Levant, in Egypt, in Barbary, in Arabia, and Persia; but there is this difference: the Algazelle feeds upon the plains, and the Pasan is only found in the mountains. The flesh of both is very good food.

The ninth Gazelle is an animal which is called *Nanguer* at Senegal. It is three feet and a half long, two feet and a half high; it is of the colour of the roebuck, fallow upon the upper part of the body, white under the belly and upon the hinder parts, with a spot of the same colour on the neck. Its horns are prominent, like those of the other Gazelles, and are about six or seven inches in length: they are black and round; but what is very particular in them is, that near the points they are crooked forwards, nearly as those of the chamois are bent backwards. These Nanguers are very beautiful animals, and very easy to tame.

The tenth Gazelle is a very common animal in Barbary and in Mauritania, and so well known to the English that they have given it the name of the *Antelope*. This animal is of the size of a roebuck, and greatly resembles the common Gazelle and the kevel, yet differs from them in many particulars, so as to be looked upon as an animal of a different species. This Antelope has deeper eye-pits than the common Gazelle; its horns are about fourteen inches long, almost touching each other at the bottom, spreading as they rise, so as, at their tips, to be sixteen inches asunder. They have the annular prominences of the Gazelle and the kevel, but not so distinguishable as in those. But what serves particularly to distinguish this Antelope is, the double flexure, very uniform and remarkable, so that the two horns make a tolerable representation of an antique lyre.

In reviewing all the animals of this class, we find there are about twelve species, or distinct varieties, in the Gazelles; and, after having carefully compared them we suppose, first, that the common Gazelle, the Kevel, and the Corin, are only three varieties of one species; secondly, that the Tzeiran, the Koba, and the Kob, are all three varieties of another species; thirdly, we presume, that the Algazelle, and the Pasan, are only two varieties of the same species; and we imagine that the name *Bezoar Gazelle*, which has been given to the Pasan, is no distinctive character; for we think ourselves able to prove, that the Oriental bezoar does not come from the Pasan alone, but from all the Gazelles and goats which live in the mountains of Asia; fourthly, it appears, that the Nanguers, whose horns are crooked forwards, and who, together, compose two or three particular varieties, have been indicated by the ancients under the name of the *Dama;* and, fifthly, that the Antelopes, which are about three or four in number, and which differ from all others, by the double flexure of their horns, have also been known to the ancients by the names of *Strepsiceros* and *Addax*.

The Gazelles are hunted not only with dogs, assisted by the falcon, but also, in some countries, with the ounce. This fine animal, tamed for the purpose, generally goes with the hunter; and when the prey is near, they unchain it, and show it the Gazelles. It immediately exerts all its arts and fierceness in the pursuit, not, as might be supposed, by running after them, but by turning and winding about with the utmost cunning till it is near its prey, when it bounds all at once upon the Gazelle, strangles it instantaneously, and sucks its blood. If it misses its aim, which often happens, it rests in the place, nor attempts to pursue them any further; perhaps from the instinct that, as they can run much swifter, and a longer time, the chase would be useless. The master then draws near the ounce, coaxing it, and flinging it some pieces of flesh until he is near enough to chain and bring it back to its former station.

In some places they take the wild Gazelles by the means of a tame one, to the horns of which they fasten a snare made of cord. When a herd of Gazelles is found, the tame one is sent among the rest; it no sooner approaches than the males of the wild herd advance to oppose him, and, in butting with their horns, are entangled in the noose In this struggle, they both commonly fall to the ground, when the hunter coming up kills the one, and disengages the other.

The Antelopes, especially the largest sort, are much more common in Africa than in India; they are stronger and fiercer than the other Gazelles, from which they are easily distinguishable by the double flexure of their horns; they have also no black or brown streaks on their sides. The middling sized Antelope is about the size and colour of the deer; their horns are very black, their body very white, and their fore legs shorter than the hinder ones. They are well made, and only sleep in dry and clean places; they are likewise very swift, very watchful, and very apprehensive of danger; so that, in open places, when they see a man, a dog, or any other enemy, they fly, with all their swiftness, till they are out of danger. But, notwithstanding this natural timidity, they have a kind of courage, if they are surprised; when they turn short round, and face the enemy that attacks them with great firmness.

Such is the brightness and beauty of the eyes of the Antelope, that they furnish similes to the poet; and to call a woman "gazelle-eyed," is to pay her one of the highest compliments.

The Bezoar Stone is the production not only of Gazelles, but of wild and domestic goats, and even sheep. Probably the formation of this stone depends more on the temperature of the climate, and the quality of the food, than on the nature or species of the animal. Some authors have asserted, that the true occidental bezoar, i. e. that which possesses most virtue, is the production of monkeys, and not of Gazelles, goats, or sheep. But this opinion is not founded on a proper basis; for we have seen many of these concretions, to which the name of *monkey bezoar* has been given, quite different from the *oriental bezoar*, which is certainly produced by a ruminating animal, and which is easily distinguishable from all other bezoars, by its shape, substance, and colour, which is generally of an olive brown without and within; while the *occidental* bezoar is of a pale yellow; the substance of the first is also softer and finer; that of the last harder and drier. The oriental bezoar has been prodigiously in vogue, and a great consumption has been made of it in the last century; and since it has been made use of in Europe and in Asia, for all cases in which our present physicians give cordial medicines and other antidotes, may we not presume, by the great quantities which formerly have been, and by what at present is consumed, that this stone is produced not from a single species of animal, but from many; and that it is equally the production of Gazelles, goats, and sheep, who cannot produce it but in certain climates of the Levant and Indies.

This stone is formed, as is well known, by concentrical layers, and often contains some foreign matter, even from the circumference to the very centre. We have inquired into the nature of this matter, which serves as a nucleus to the oriental bezoar, from which a judgment may be formed of the kind of animal that has swallowed them. This nucleus is of various kinds, sometimes pieces of flint, tamarinds, grains of cassia, pieces of straw, and the young buds of trees in particular; therefore, from the above facts, we can attribute this production only to those animals which brouse upon shrubs and leaves.

Garcius ab Horte says, that in Khorasan, and in Persia, there is a kind of goats called pasans, and that it is in their stomachs that the bezoar is formed; for, in the great number of goats that are killed for the subsistence of the troops, the stones are eagerly sought after, in the stomachs of these animals, and very commonly found there.

With respect to the occidental bezoar, we can affirm, that they proceed neither from goats nor Gazelles, nor even any animal of that kind, in all the extent of the New World. Instead of Gazelles, we only meet with roebucks in the woods of America; instead of wild goats and sheep, animals of a quite different nature are seen on the mountains of Peru and Chili, viz. the llamas and the pacos.

Mr. Daubenton, who has more narrowly inspected into the nature of bezoar stones than any other person, thinks that they are composed of a matter similar to that which fastens itself to the teeth of ruminating animals, in form of a shining tartareous matter

The chamois, and perhaps the ibex of the Alps, the goats of Guinea, and many other animals of America, afford bezoar; and if we comprehend, under this name, all concretions of this nature which are met with in different animals, we may be assured that most quadrupeds, excepting carnivorous ones, produce bezoar which is even to be found in crocodiles and alligators.

To form, therefore, a clear idea of these concretions, it will be necessary to divide them into many classes, and fix them to the animals which produced them, observing, at the same time, the climate and the food which mostly assisted this kind of production.

First, then, the stones which are found in the bladder, and in the reins of men, and other animals, must be held distinct from the bezoar class, and described by the name of *calculi*, their substance being quite different from that of the bezoar; they are easily known by their weight, their urinous smell, and their composition, which is not regular, nor formed with concentrical layers, like that of the bezoar.

2. The concretions that are often found in the gall-bladder, and in the liver of the human species, and of the brute creation, must not be regarded as bezoar stones, they being easily distinguishable from them, by their lightness, their colour, and their inflammability; and, besides, they are not formed by layers encircled round, or nucleuses, like the bezoar.

3. The balls that are often found in the stomach of animals, and especially in those that ruminate, are not true bezoars. These balls, which are called *egagropiles*, are composed internally of the hair the animal has licked off and swallowed, or from the hard roots which he has fed upon, and which he could not digest; their external part is incrusted with a viscous substance, something similar to that of the bezoar. The *egagropiles*, therefore, have nothing in them, except this external layer, of the bezoar; and a single inspection is sufficient to distinguish the one from the other.

4. *Egagropiles* are often found in the animals of temperate climates, but scarcely ever any bezoar. Animals of hotter countries, on the contrary, only produce bezoar: the elephant, the rhinoceros, the goats, the Gazelles of Asia and Africa, the llama of Peru, and others, produce, instead of *egagropiles*, solid bezoar, whose substance and size vary relatively according to the difference of the animals and the climates.

5. The bezoar to which the greatest virtues and properties have been attributed is the oriental bezoar, which, as we have said, proceeds from the goats, Gazelles, and sheep, which feed on the mountains of Asia. The bezoar of an inferior quality, and which is called *occidental*, is produced from llamas and pacos, which are to be found in the mountains of South America. In short, the goats and Gazelles of Africa also produce bezoar, but not of so good a quality as those of Asia.

From all these circumstances, we may conclude that, in general, the bezoar is only a residue of the vegetable nutriment, which is not to be found in carnivorous animals, and which is only produced in those who feed on plants; that in the mountains of Southern Asia the herbage being stronger than in the other parts of the world, the bezoar which is made from the residue of that food has also more virtues than any other; that in America, where the heat is less, the grass of the mountains being weaker, the bezoars produced there are inferior to the first; and in Europe, where the grass is still weaker, and in all the valleys of both continents, no bezoar is produced, but only *egagropiles*, which contain nothing but hair or roots, and very hard filaments, which the animal was unable to digest.

THE BUBALUS, OR STAG-LIKE ANTELOPE,

RESEMBLES the stag, the gazelle, and the ox, in many very remarkable respects; the stag, in the size and shape of its body and legs, in particular; but its horns are permanent, and made nearly like those of the largest gazelles; which animal it also resembles in its natural habits; its head, however, is much longer than the gazelle's, and even than the stag's; and it resembles the ox, by the length of the muzzle, and the disposition of the bones of the head.

The horns of the Bubalus are crooked backwards, and twisted like a corkscrew. The shoulders are elevated, so that they form a sort of hunch upon the withers. The tail is almost a foot long, and furnished with a quantity of hair at its extremity.

The hair of the Bubalus is like that of the elk, fine towards the root, thick in the middle and extremity

This character is particular to these two animals; for the hair of almost every quadruped is thicker at the root than at the middle and point. The hair is nearly of the same colour as the elk, though much shorter, thinner, and softer; and these alone are the resemblances between the Bubalus and the elk.

The Bubalus is common in Barbary, and in all the northern parts of Africa. It is nearly of the same nature as the antelope, and has, like that, short hair, and a black hide, and flesh which makes very good food.

THE CONDOMA, OR STRIPED ANTELOPE.

The Marquis de Marigny had in his cabinet the head of an animal, which, at first sight, I supposed to have belonged to a great bubalus. It is like those of our largest stags; but the horns, instead of being solid like those of the stag, are large and hollow, with a ridge like those of the goat kind, and with varied flexures like those of the antelope. In examining the royal cabinet for what might be there relative to this animal, two horns were found which belonged to it; the first, without any mark or name, came from his majesty s wardrobe; the second was given, in 1760, by M. Bauchis, commissary of the marines, with the name of the Condoma of the Cape of Good Hope affixed to it.

In looking over the works of travellers, for those marks which might have an affinity with the remarkable size of the horns of this animal, we can find none which have a nearer relation to it than those of the animal indicated by Kolben, by the name of the *wild goat* of the Cape of Good Hope:—" This goat," he says, " to which the Hottentots have not as yet given a name, and which I call the *wild goat*, is very remarkable in many respects. It is about the size of a large stag; its head is very handsome, ornamented with two crooked and pointed horns, about three feet long, and, at their extremities, about three feet asunder. All along the back there runs a white list, which ends at the insertion of the tail; another of the same colour crosses this at the bottom of the neck, which it entirely surrounds. There are two more running round the body, one behind the fore legs, and one parallel before the other. The colour of the rest of the is grayish, except the belly, which is white. It also a long, gray beard; and its legs, though long, are well proportioned."

THE GUIB, OR HARNESSED ANTELOPE,

Is common in Senegal It resembles the gazelles, especially the nangue [illegible] the size and shape of its body, by the fineness [illegible] legs, by the shape of its head and muzzle, by the eyes, by the ears and length of its tail, and by the defect of a beard; but every gazelle, especially the nanguer, has the belly white, while the breast and belly of the Guib is of a deep brown. It also differs from the gazelles by the horns, which are smooth, and not marked with annular prominences. They are also a little compressed; and the Guib, in these particulars, is more like the goat than the gazelle; nevertheless, it is neither the one nor the other, but of a particular kind, which seems to be intermediate between the gazelle and the goat. It is also remarkable for white lists on a brown ground, which are disposed along the animal's body, as if it were covered with a harness. It feeds in company; and they are found in numerous herds in the plains of Podor.

THE GRIMM.

This animal is only known to naturalists by the name of the *Wild Goat of Grimmius;* and, as we are not acquainted with the name it bears in its own country, we cannot do better than adopt this precarious denomination. There are two characters which are sufficient to distinguish it. The first is a very deep cavity under each eye; the second is a tuft of hair, standing upright on the top of the head. It resembles both the goat and the gazelle, not only in the shape of its body, but even in its horns, which are annulated towards the base, and have longitudinal streaks, like those of the gazelles; at the same time, they are very short, and bend backwards in a horizontal direction. Its hair is generally of a yellowish fawn colour, gray along the back, the muzzle black, and the limbs gray. There is some reason to think, that the male Grimm alone is furnished with horns. It is a native of Guinea.

THE INDIAN ANTELOPE.

"The Indian Antelope (says Mr. Bennett,) of which the specimen in the Tower constitutes a remarkable and highly interesting variety, is not only one of the most beautiful, but also the most celebrated species of the group. It occupies the place of Capricorn in the Indian zodiac, and is consecrated to the service of Chandra, or the Moon. In size and form it closely resembles the gazelle of the Arabs, the well known emblem of maiden beauty, typified, according to the poets, in the elastic lightness of its bound, the graceful symmetry of its figure and the soft lustre of its full and hazel eye. From this truly elegant creature our antelope is, however, essentially distinguished by several striking characters. Its horns, which are peculiar to the male, are spirally twisted, and form, when fully grown, three complete turns; they are closely approximated to each other at the base, but diverge considerably as they proceed upwards. They occasionally attain a length of nearly two feet, and are surrounded throughout by elevated and close set rings. The two horns taken together have frequently been compared to the branches of a double lyre. The extremity of the nose is bare, forming a small and moist muzzle; the sub-orbital openings are larger and more distinct than in almost any other species, and the ears are pointed, and of moderate size. The natural colours vary with the age of the animal, but correspond in general pretty closely with those of the common deer. They may be shortly described as fawn above and whitish beneath, becoming deeper with age, and lighter in the females than in the males. The occasional stripes of a lighter or darker colour, which are generally visible on various parts of the body, can scarcely be considered as occurring with sufficient regularity to allow of their being described as characteristic of the species. But for these shades of colour, or for any other, we shall look in vain in the animal of the Tower Menagerie, which, in consequence of a particular conformation, not unfrequent in some species of animals, and occasionally met with in the human race, is perfectly and purely white." It is, in fact, an Albino—a circumstance which, in all cases, is attributable to the absence of the reta mucosum from the skin.

"The present species of Antelope is spread over the whole of the peninsula of Hindostan and a part of Persia, but it is questionable whether it has been found in Africa, as is commonly asserted."

THE CHEVROTINS.

We have given the name of *Chevrotin* (*tragulus*) to those small animals of the hotter countries of Africa and Asia, which almost every traveller has mentioned, by the denomination of *Small Stags*, or *Little Hinds:* in fact, the Chevrotin is a miniature resemblance of the stag, by the shape of the muzzle, the delicacy of its body, the shortness of its tail, and the shape of its legs; but it differs greatly from it in the size, the largest Chevrotins being never found longer than the hare. In other respects, the horns of those which have any, are hollow, annulated, and nearly resembling the gazelles. Their foot is cloven, and is also more of the gazelle than of the stag kind. They differ from the gazelle and the stag, by not having any depressions or hollows under their eyes, and in that respect approach nearer the goat kind; but, in reality, they are neither stag, gazelle, nor goat, and constitute one or more distinct species. Seba gives the figures and the descriptions of five Chevrotins: the first, the *small red Guinea Hind, without horns;* the second, the *Fawn*, or *small African Stag;* the third, the *small young Stag of Guinea;* the fourth, the *small red and white spotted Hind of Surinam;* the fifth, the *red haired African Stag*. Of these five Chevrotins mentioned by Seba, the first, second, and third, are evidently the same animal; the fifth, which is larger than the three first, and whose hair is redder, much longer, and of a deeper brown, seems to be only a variety of this species; the fourth, which the author indicates as an animal of Surinam, is probably but a second variety of this species; which is only found in Africa, and in the southern parts of Asia.

These animals are of an elegant make, and finely proportioned for their size. But, though they leap and bound with prodigious swiftness, yet, apparently, they cannot continue it for a long time; for the Indians often hunt them down; and the Negroes likewise pursue them, and knock them down with their sticks. They are greatly hunted after, as their flesh is excellent food. They can only live in excessively hot climates; and they are so exceedingly delicate, that it is with the greatest trouble they are transported into Europe alive, where they perish in a short time. They are easily tamed, very familiar, and beautiful. The Chevrotin is, without doubt, the least of all cloven-footed animals. According to this character, they should not bring forth many young; but, if we reason from their small size, we should imagine they brought forth several at a time. They are exceedingly numerous in the Indies, Java, Ceylon, Senegal, Congo, and in every other country that is excessively hot, and are not to be found in America, nor in any of the temperate climates of the Old Continent.

MAZAME,

In the Mexican language, was the name of the stag, or rather of the whole race of stags, deer, and roebucks. Travellers distinguish two kinds of Mazames, both common to Mexico and New Spain; the first and largest, to which they give the simple name of Mazame, has horns like that of the roebuck of Europe, about six or seven inches in length, and of a dark hue, with the extremities pointed and bent back; it is less than a goat; its fur is generally of a pale reddish brown above; on the chest and inner part of the limbs it is of a yellowish white; its tail is thick and short. The second, called *Tememazame*, is less than the former, is handsomely shaped; its ears are long, narrow, and rounded at the end; the tail is pretty long; the fur is fawn coloured above, and white beneath, with a spot of white on the chest, and another round the mouth. The horns are about six inches long, black, and a little bent at the point.

THE COUDOUS.

Of all animals, those that chew the cud are the most numerous, and most varied. In the very great quantity of horns collected together in the royal cabinet, or dispersed in private collections, there still remains one without label, without name, absolutely unknown, and of which we have no other indexes than those which we can draw from the subject itself. This horn is large, almost straight, and very thick and black. It is not solid like that of the stag, but resembles that of the ox. After seeking a number of different cabinets, we at last found, in that of Mr. Dupleix, a head adorned with two horns, resembling this we mention: this was labelled with these words—*The horns of an animal nearly like a horse, of a grayish colour, with a mane before its head: it is called, at Pondicherry,* COESDOES, *which should be pronounced* COUDOUS.

The Coudous may possibly be of the buffalo species; and the travellers in Africa, where the buffalo is as common as in Asia, more precisely mention a kind of buffalo, called *pacasse*, at Congo, which, by the indexes, seems to us to be the Coudous. "In the route from Louanda to the kingdom of Congo, we perceived," say they, "two Pacasses, which are animals greatly resembling buffaloes, and which roar like lions. The male and female always go together. They are white, spotted with red and black. Their ears are about half an ell long; and their horns are short. They neither fly at the sight of the human species, nor do them any injury, but only look at them as they pass by."

It appears probable that M. Buffon is in error, both as to the native place of this animal and its belonging to the buffalo class. The Coudous is, most probably, the *Antilope Oreas* of Pallas, the *Canna* or *Gann* of the Hottentots, and inhabits the mountains of the Cape of Good Hope. This animal is of the size of a horse, has a long head, and its fur is of a fawn colour bordering on red above, white beneath, and ash coloured on the head and neck.

THE GNU.

The genus of antelope is almost infinitely extended, and probably embraces some animals not yet described. To this genus may perhaps be referred that singular quadruped, which the Hottentots, from its voice, distinguish by the name of *Gnu*. It is described by travellers as resembling in form the horse, the ox, and the stag. It is about the size of a small horse, that is, about four or five feet in height, and between five and six in length. The colour of the body, which is said to be finely proportioned, is a dark brown. Its limbs are slender. Its neck is longer than that of the ox, but neither so long nor so slender as that of the horse. Like the horse it is adorned with a mane, which is stiff and erect. Its horns are singularly curved, being somewhat of the shape of the Greek letter upsilon. Its head, however, resembles most that of the ox species. Besides the mane, it has also on the chin and breast a shaggy stiff hair, which is black, while the colour of the mane and tail is gray. It is a native of the southern parts of Africa, where it exists in a gregarious state, and in very large herds. It is a lively, capricious animal.

The Gnu is thus described by Mr. Pringle, who had abundant opportunities of studying its habits at the Cape of Good Hope, and whose talents and observant spirit particularly qualify him to investigate and to communicate the result of his investigation. "The curious animal called *Gnu* by the Hottentots, and *Wilde Beest* (i. e. Wild Ox) by the Dutch colonists, was an inhabitant of the mountains adjoining the Scottish settlement at Bavian's river, and I had therefore opportunities of very frequently seeing it both singly and in small herds. Though usually, and perhaps correctly, by naturalists ranked among the antelope race, it appears to form evidently one of those intermediate links which connect, as it were, the various tribes of animals in a harmonious system in the beautiful arrangement of nature. As the *hyæna dog*, or '*wilde hond*' of South Africa, connects the dog and wolf tribe with that of the hyæna, in like manner does the Gnu form a graceful link between the buffalo and the antelope. Possessing the distinct features which, according to naturalists, are peculiar to the latter tribe he Gnu exhibits at the same time in his general aspect, figure, motions, and even the texture of his flesh, qualities which partake very strongly of the bovine character. Among other peculiarities, I observed, that, like the buffalo or the ox, he is strangely affected by the sight of scarlet; and it was one of our amusements when approaching these animals to hoist a red handkerchief on a pole, and to observe them caper about, lashing their flanks with their long tails, and tearing up the ground with their hoofs, as if they were violently excited, and ready to rush down upon us; and then all at once, when we were about to fire upon them, to see them bound away, and again go prancing round us at a safer distance. When wounded, they are reported to be sometimes rather dangerous to the huntsman; but though we shot several at different times, I never witnessed any instance of this. On one occasion, a young one, apparently only a week or two old, whose mother had been shot, followed the huntsman home, and I attempted to rear it on cow's milk. In a few days it appeared quite as tame as a common calf, and seemed to be thriving; but afterwards, from some unknown cause, it sickened and died. I heard, however, of more than one instance in that part of the colony, where the Gnu, thus caught young, had been reared with the domestic cattle, and had become so tame as to go regularly out to pasture with the herds, without exhibiting any inclination to resume its natural freedom; but in consequence of a tendency which the farmers say they evinced to catch, and to communicate to the cattle, a dangerous infection, the practice of raising them as curiosities has been abandoned. I know not if this imputation be correct, but it is true that infectious disorders do occasionally prevail to a most destructive extent among the wild as well as the domesticated animals in South Africa, and especially among the tribes of larger antelopes.

"There is another species of Gnu found farther to the northward of which I saw a single specimen in the colony, which, in the shape of the horns, and some other particulars, still more resembles the ox. This species has been described by Burchell, under the name of *antilope taurina*."

THE NYL GHAU.

PENNANT gives to this animal the name of the white-footed antelope. Its Persian name Nyl Ghau signifies a blue cow or bull; and, in fact, the creature seems to join something of the bull species with something of the antelope or deer. It is rather more than four feet high at the shoulder. The male is of a dark gray colour, with short horns; the female is of a pale brown, without horns. The mode in which these animals fight is curious. While still at a distance from each other, they prepare for the attack by falling on their fore knees, and when they come within a few yards they make a spring, and dart against each other. The force with which they spring in this manner is very great. In its wild state the Nyl Ghau is said to be exceedingly vicious; but when domesticated, it becomes tame and even affectionate. It is a native of the interior parts of India, and in several parts of that country is considered as royal game, to be hunted only by princes.

THE MUSK ANIMAL, OR THIBETIAN MUSK.

To finish a complete history of goats, and other animals of this genus, there is only one remaining to be described, which is as famous as it is unknown. The animal we mean is that which produces the musk, which all modern naturalists, and the greatest part of travellers through Asia, have spoken of, some by the name of the stag, roe-buck, and musk goat; others have considered it as a large chevrotin; and truly it seems to be of an ambiguous nature, participating of all the above animals, although, at the same time we can assert, that its species is different from all others. It is a native of the highest and rudest mountains of Thibet, and some other parts of Asia, about the size of a small roe-buck, or gazelle; but its head is without horns; and by this character it resembles the *memina*, or chevrotin of India. It has two great canine teeth or tusks in the upper jaw, by which it approaches the chevrotin; but, what distinguishes it from all other animals, is a kind of bag, about two or three inches in diameter, which grows near the navel, and into which a liquor filtrates, which differs from the civet by its smell and consistence. Neither the Greeks nor Romans have made any mention of the Musk Animal; and Grew is the only person who has made an exact description of it from its skin. The description given by that author is as follows:—

The Musk Stag is about three feet six inches in length, from the head to the tail; and the head is about half a foot long; the neck, seven or eight inches; the fore part of the head, three inches broad, and like that of a greyhound; the ears are erect, like those of a rabbit, and about three inches long; the tail is not above two inches; the fore legs are about thirteen or fourteen inches high; it is cloven-footed, armed behind and before with two horny substances, but none on the hind feet.

The bladder or bag which contains the musk is about three inches long, two broad, and stands out from the belly about an inch and a half. The animal has twenty-six teeth. There is also a tusk, or canine tooth, about two inches and a half long, on each side in the upper jaw, which terminates in the form of a hook. It has no horns. It appears, further, that the hair of this animal is long and rough, the muzzle pointed, the tusks somewhat like those of the hog. By these marks it approaches the boar kind, and perhaps still more that of the *babiroussa*, which the naturalists have denominated the *Indian boar*. The American hog also, which we call *pecari*, has a bag or cavity on its back, containing plenty of a very odoriferous humour. In general, those animals which produce odoriferous liquors, as the badger, the castor, the pecari, the ondatra, the desman, the civet, the zibet, are not of the stag or goat kind. Thus we might be tempted to think, that the Musk Animal is nearer the hog species than that of the goat.

In respect to the matter of musk itself, its essence, that is, its pure substance, is perhaps as little known as the nature of the animal which produces it. All travellers agree, that the musk is always mixed and adulterated with blood, or some other drugs, by those who sell it. The Chinese not only increase the quantity by this mixture, but they endeavour likewise to increase the weight by incorporating with it lead very finely ground. The purest musk, and that which is the most sought after, even by the Chinese themselves, is that which the animal deposits upon trees or stones, against which it rubs itself when the quantity renders it uneasy. The musk which is brought over in the bag is very seldom so good, because it is not yet ripe, or because it is only in their rutting season that it acquires all its strength and all its smell; and it is at this time the animal endeavours to disburthen itself of this pure matter, which then causes such violent itchings and irritations. A single grain of musk is sufficient to perfume a great quantity of other matter; and the odour expands itself to a very great distance. The smallest particle is sufficient to perfume a considerable space; and the perfume is so permanent, that, at the end of several years, it does not seem to have lost much of its power.

CHAPTER XIX

Of the Babiroussa, or Indian Hog—The Cabiai—The Porcupine—The Couando—The Urson—The Asiatic Hedgehogs—The Camelopard—The Llama and Paco—The Vicuna—The Sloth—The Surikat—The Tarsier—The Phalanger—The Coquallin—The Hamster—The Bobak—The Jerboa—The Ichneumon—The Gray Ichneumon—The Fossan—The Vansire—The Maki or Macauco—The White-headed Mongoos—The Bengal Loris—The Javelin Bat.

THE BABIROUSSA, OR INDIAN HOG.

All naturalists have regarded this animal as a kind of hog, though it has neither the head, shape, bristles nor tail of a hog. Its legs are longer and its muzzle shorter. It is covered with soft and short hair like wool; and its tail, which tapers to a fine point, is terminated by a tuft of the same; its body is likewise not so thick and clumsy as that of the hog; its ears are short and pointed; its skin is black, and furrowed with wrinkles and creases; but the most remarkable character, and what distinguishes it from all other animals, are four enormous tusks, or canine teeth; the teeth, the two shortest of which shoot out of the lower jaw, like those of the boar; the two others, which come from the upper jaw, pierce the cheeks, or rather the upper part of the lips, and rise crooked almost to the eyes. These tusks are of a very beautiful ivory, much smoother and finer, but not so hard as that of the elephant.

These quadruple and enormous tusks give these animals a very formidable appearance; they are, however, less dangerous than our wild boars. They go, like them, in herds; they have a very strong smell, by which they are easily discovered, and hunted with good success. They grunt terribly, defend themselves, and wound their enemy with their under tusks; for the upper are rather of disservice than of use to them Although wild and ferocious as the boar, they are tamed with great ease; but their flesh, which is very good food, putrefies in a very short time. As their hair is fine, and their skin delicate, it is soon penetrated by the teeth of the dogs, who hunt them in preference to wild boars, and sooner accomplish their purpose. The Babiroussa strikes its upper tusks into the branches of trees, to rest its head, or to sleep standing. This habit it has in common with the elephant, who, in order to sleep in an erect posture, supports his head by fixing the end of his tusks in the holes which he makes in his lodging.

The Babiroussa differs still more from the wild boar by its natural appetites. It feeds upon grass and leaves of trees, and does not endeavour to enter gardens, to feed on beans, peas, and other vegetables; while the wild boar, who lives in the same country, feeds upon wild fruits, roots, and often on the depredations it makes in gardens. These animals, who go alike in herds, never mix: the wild boars keep on one side, and the Babiroussas on the other; these walk quicker, and have a very fine smell. They often fix themselves against a tree, to keep off the hunters and their dogs. When they are pursued for a long time, they make towards the sea, and, swimming with great dexterity, very often escape their pursuit; for they swim for a very long time, and often to very great distances and from one island to another.

The Babiroussa is found not only in the island of Bourou, near Amboyna, but also in many parts of Southern Asia and Africa. We have not had it in our power to convince ourselves, that the female had not the two tusks which are so remarkable in the male; but most authors, who have spoken of this animal, seem to agree in this circumstance.*

THE CABIAI

This American animal, which is also called the Capibara, has never yet made its appearance in England. It is not a hog, as naturalists and travellers pretend; it even resembles it only by trifling marks, and differs from it by striking characters. The largest Cabiai, is scarcely the size of a hog of eighteen months' growth. the head is longer; the eyes are larger; the snout, instead of being rounded, as in the hog, is split like that of a rabbit or hare, and furnished with thick, strong whiskers; the mouth is not so wide; the number and form of the teeth are different; for it is without tusks: like the peccary, it wants a tail, and, unlike to all others of this kind, is in a manner web-footed, and thus easily fitted for swimming and living in water, The hoofs before are divided into four parts, and those behind into three; between the divisions, there is a prolongation of the skin; so that the feet, when opened in swimming, can beat a great surface of water.

This animal, thus made for the water, swims there like an otter, seeks the same prey, and seizes the fish with its feet and teeth, and carries them to the edge of the lake to devour them, with the greatest ease. It lives also upon fruits, corn, and sugarcanes. As its legs are broad and flat, it often sits upright upon its hind legs. Its cry resembles more the braying of an ass than the grunting of a hog. Its colour is a deep reddish brown above, and fawn beneath. It seldom stirs out but at night, and almost always in company, without going far from the sides of the water in which

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*Lesson, the latest naturalist who has mentioned the Babiroussa, and who examined many of them in Java, states that the female has only two tusks, and is also much smaller than the male.

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JAGUAR. P. 50.

it preys. It can find no safety in flight; and, in order to escape its enemies which pursue it, it plunges into the water, remains at the bottom a long time, and rises at such a distance, that the hunters lose all hopes of seeing it again. It is fat; and the flesh is tender, but, like that of the otter, rather of a fishy taste; the head, however, is not bad; and this agrees with what is said of the beaver, whose exterior parts have a taste like fish.

The Cabiai is quiet and gentle: it is neither quarrelsome nor ferocious with other animals. It is easily tamed, comes at call, and willingly follows the hand that feeds it. We do not know the time of their bringing forth their young, their growth, and consequently the length of the life of this animal. They are very common in Guiana, as well as in Brazil, in Amazonia, and in all the lower countries of South America.

THE PORCUPINE.

The name of this animal leads us into an error, and induces many to imagine, that it is only a hog covered with quills, when, in fact, it only resembles that animal by its grunting. In every other respect, it differs from the hog as much as any other animal, as well in outward appearance as in the interior conformation. Instead of a long head and ears, armed with tusks, and terminated with a snout; instead of a cloven foot, furnished with hoofs, like the hog, the Porcupine has a short head, like that of the beaver, with two large incisive teeth in the fore part of each jaw; no tusks, or canine teeth: the muzzle is divided like that of the hare; the ears are round and flat, and the feet armed with nails; instead of a large stomach with an appendage in form of a caul, the Porcupine has only a single stomach, with the large cæcum gut; the parts of generation are not apparent externally, as in the male hog; its testes, and the other parts of generation, are likewise concealed in the body. By all these marks, as well as by its short tail, its long whiskers, and its divided lip, it partakes more of the hare, or beaver kind than that of the hog. The hedgehog, indeed, who is, like the Porcupine, covered with prickles, is somewhat resembling the hog; for it has a long muzzle, terminated by a kind of snout; but all these resemblances being very distant, it seems that the Porcupine is a peculiar and different species from that of the hedgehog, the beaver, the hare, or any other animal with which it may be compared.

It is generally about two feet in length, from the head to the extremity of the tail. The body is covered with spines, from ten to fourteen inches long, resembling the barrel of a goosequill in thickness, but tapering at both ends, and variegated with black and white rings. In their usual state, they incline backward, like the bristles of a hog, but when the animal is irritated, they rise and stand upright.

Travellers and naturalists have almost unanimously declared, that this animal has the faculty of discharging its quills, and wounding its foes at an immense distance; that these quills have the extraordinary and particular property of penetrating farther into the flesh, of their own accord, as soon as ever the point has made an entrance through the skin. These stories, however, are all purely imaginary, and without the smallest foundation or reason. The error seems to have arisen either from this animal raising its prickles upright, when he is irritated; and, as there are some of them which are only inserted into the skin by a small pellicle, they easily fall off; or from his sometimes shaking off his quills to a considerable distance when he is shedding them. We have seen many Porcupines, but have never observed them dart any of their quills from them, although they were violently agitated. We cannot, then, avoid being greatly astonished, that the greatest authors, both modern and ancient, as well as the most sensible travellers, have joined in believing a circumstance so entirely false. In justice, however, to Dr. Shaw, we must except him from the number of these credulous travellers: "Of all the number of Porcupines," says he, "which I have seen in Africa, I have never yet met with one which darts its quills, however strongly it was irritated. Their common method of defence is to lie on one side, and when the enemy approaches very near, to rise suddenly, and wound him with the points of the other." It appears, however, that there is a pernicious quality in the quills; which renders it difficult to cure the wounds inflicted by them.

The Porcupine, although a native of the hottest climates of Africa and India, lives and multiplies in colder countries, such as Persia, Spain, and Italy. Agricola says, that the species were not transported into Europe before the last century. They are found in Spain, but more commonly in Italy, especially on the Apennine mountains, and in the environs of Rome.

In its wild state, the Porcupine is a perfectly inoffensive animal. It never attacks, and will elude an aggressor when it can; but if compelled to defend itself, it forces even the lion to retire. In its domestic state, it is neither furious nor vicious; it is only anxious for its liberty; and, with the assistance of its fore teeth, which are sharp and strong, like those of the beaver, it easily cuts through a wooden prison. It is also known, that it feeds willingly on fruits, chestnuts, and crumbs of bread; that, in its wild state, it lives upon roots and wild grain; that, when it can enter a garden, it makes great havoc, eating the herbs, roots, fruit, &c. It becomes fat, like most other animals, towards the end of summer; and its flesh, although insipid, is tolerable eating.

When the form, substance, and organization of the prickles of the Porcupine are considered, they are found to be true quills, to which only feathers are wanting to make them exactly resemble those of birds. They strike together with a noise as the animal walks; and it easily erects them in the same manner as the peacock spreads the feathers of its tail. The Indians use them to adorn many articles of dress and furniture, and dye them of various colours.

THE COUANDO, OR BRAZILIAN PORCUPINE.

The Porcupine, as has been observed, is a native of the hot countries of the Old World; but, not having been found in the New, travellers have not hesitated to give its name to animals which seemed to resemble it, and particularly to that of which we are about to take notice. On the other hand, the Couando of America has been transported to the East Indies; and Pison, who probably was not acquainted with the porcupine, has engraved in Bontius the Coando of America, under the name and description of the true porcupine. The Couando, however, is not a porcupine, it being much less; its head and muzzle is shorter; it has no tuft on its head, nor slit in the upper lip; its quills are somewhat shorter, and much finer; its tail is long, and that of the porcupine is very short; it is carnivorous, rather than frugivorous, and endeavours to surprise birds, small animals, and poultry, while the porcupine only feeds upon herbs, greens, fruits, &c. It sleeps all the day, like the hedgehog, and only stirs out in the night; it climbs up trees, and hangs in the branches by its tail, which the porcupine cannot do. All travellers agree that its flesh is very good eating. It is easily tamed, and commonly lives in high places. These animals are found over all America, from Brazil and Guiana to Louisiana and the southern parts of Canada: while the porcupine is only to be found in the hottest parts of the Old Continent.

In transferring the name of porcupine to the Couando, they have supposed and transmitted to him the same faculties, especially that of lancing his quills. Ray is the only person who has denied these circumstances, although they evidently appear at first view to be absurd.

THE URSON, OR CANADA PORCUPINE.

This animal, placed by nature in the desert part of North America, to the east of Hudson's Bay, exists independent of, and far distant from, man. The *Urson* might be called the *spiny beaver*, it being of the same size, the same country, and the same form of body; it has, like that, two long, strong, and sharp incisive teeth at the end of each jaw; its prickles are short, and almost covered with hair; for the Urson, like the beaver, has a double coat; the first consists of long and soft hair, and the second, of a down, or felt, which is still softer or smoother. In the young Ursons the prickles are proportionably larger, more apparent, and the hair shorter and scarcer than in the adults

This animal dislikes water, and is fearful of wetting himself. He makes his habitation under the roots of great hollow trees, sleeps very much, and chiefly feeds upon the bark of juniper. In winter, the snow serves him for drink; in summer, he laps water like a dog. The savages eat his flesh, and strip the bristles off the hide, which they make use of instead of pins and needles. Many of the trading Americans also depend upon them for food at certain seasons of the year.

THE TANREC, AND TENDRAC, OR ASIATIC HEDGEHOGS,

ARE two small animals of the East Indies, and Madagascar, which a little resemble our hedgehog, but are sufficiently different to constitute a different species What strongly proves this is, their not rolling themselves up in the shape of a ball, like the hedgehog; and where the Tanrecs are found, as at Madagascar, hedgehogs are also found of the same species as ours.

There appear to be Tanrecs of the two species, or perhaps of two different breeds. The first, which is nearly as large as our hedgehog, has its muzzle proportionably longer; and its ears are more apparent, and less furnished with prickles, than those of the second, to which we have given the name of Tendrac, to distinguish it from the first. The Tendrac is not larger than a rat; its muzzle and its ears are shorter than those of the Tanrec; which last is covered with shorter prickles, as numerous as those of the hedgehog; whereas the Tendrac has them only on the head, neck, and shoulders, the rest of the body being covered with a coarse hair resembling the bristles of a hog.

These little animals, whose legs are small, move but slowly; they grunt like a hog, and wallow like it, in mire; they are chiefly in creeks and harbours of salt water; they multiply in great numbers, and make themselves holes in the ground, and sleep for several months. During this torpid state, their hair falls off, which is renewed upon their revival. They are usually very fat; and although their flesh be insipid, soft, and spongy, yet the Indians find it to their taste, and consider it as a very great delicacy.

THE CAMELOPARD, OR GIRAFFE,

Is one of the tallest most beautiful, and most harmless animals in nature. The enormous disproportion of its legs (the fore legs being as long again as the hinder ones*) is a great obstacle to the use of its strength; its motion is waddling and stiff; in can neither fly from its enemies in its free state, nor serve its master in a domestic one. The species is not very numerous, and has always been confined to the deserts of Ethiopia, and some other provinces of Africa and India. As these countries were unknown to the Greeks, Aristotle makes no mention of this animal; but Pliny speaks of it, and Oppian describes it in a manner that is far from equivocal. "The Camelopard," says this author, "has some resemblance to the camel: its head and ears are small, its feet broad, and its legs long; but the height of the last is very unequal, the fore legs being much longer than the hinder, which are very short; so that, when the animal appears standing and at rest, it has somewhat the appearance of a-dog sitting. There are two prominences upon the head, just between the ears: they resemble two small and straight horns. Its mouth is like the stag's; its teeth small and white; its eyes full of fire; its tail short, and furnished with black hair at its end."

"There is," says Strabo, "a large beast in Ethiópia, called *Camelopardalis;* although it bears no resemblance to the panther, for its skin is not spotted in the same manner: the spots of the panther are orbicular, and those of this animal are long, and nearly resembling those of the fawn or young stag." Gillius's description seems still better. "I have seen," says he, "three Camelopards at Cairo. On their heads are two horns, six inches long; and, in the middle of their forehead, a tubercle rises to about the height of two inches, which appears like a third horn. This animal is sixteen feet high when he holds his head erect. Its neck alone is seven feet; and it is twenty feet long, from the tip of the nose to the end of the tail. Its fore and hind legs are nearly of an equal height; but the thighs before are so long in comparison to those behind, that its back seems to slope like the roof of a house. Its whole body is sprinkled with large brown spots, which are nearly of the same form. Its feet are cloven like those of the ox."

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* This is erroneous, as will be seen from Le Vaillant's description, which we have added to this article.

In inspecting he accounts travellers have given of the Camelopard, I find a tolerable agreement between them. They all agree, that it can reach with its head to the height of sixteen or seventeen feet, when standing erect; and that the fore legs are as high again as the hinder ones; so that it seems as if it were seated upon its crupper. They all likewise agree, that it cannot run very swift, on account of this disproportion; that it is very gentle, and that by this quality, and even by the shape of the body, it partakes more of the shape and nature of the camel than of any other animal; that it is among the number of ruminating animals, and, like them, is deficient of the incisive teeth in its upper jaw. By the testimonies of some, we find that the Camelopard is to be met with in the southern parts of Africa, as well as in those of Asia.

It is very clear, from what we have mentioned, that the Camelopard is a very different species from every other animal; but if we referred it to any, it would be the camel rather than the stag.

We are ignorant of the substance of the horns of the Camelopard; and in that part it may resemble the stag more than the ox, though possibly they may be neither solid, like those of the first, nor hollow, like those of the ox, goat, &c. Who knows but they may be composed of united hairs, or of a substance and texture entirely peculiar to themselves? The horns of the Camelopard are surrounded with large, coarse hair, and not covered with a down or velvet, like those of the stag. The tubercle in the middle of the head seems to form a third horn: the two others, which are not pointed, but have mossy knobs at their ends, are perhaps only tubercles somewhat resembling the former. Travellers inform us, that the female Camelopards have horns like the males, with this difference only, that they are smaller. If this animal, therefore, was really of the stag kind, the analogy would be violated here likewise; for, of all such animals, there is only the female rain-deer that has horns.

Since the period' when Buffon wrote, the Giraffe has become much better known. Several have been brought to Europe. One of them was sent as a present to his majesty by the Pacha of Egypt, and arrived in this country in 1827. It died recently There is still one existing in the Jardin des Plantes, at Paris. M. le Vaillant, the first naturalist who had an opportunity of closely examining the Giraffe, gives a full and accurate description of it in his Travels. "The Giraffe chews the cud, as all horned animals with cloven feet do Like them, too, it crops the grass; though seldom, because pasture is scarce in the country which it inhabits. Its ordinary food is the leaf of a sort of mimosa, called by the natives *kaneap*, and by the planters *kamel doorn*. The tree being peculiar to the canton, and growing only there, this may be the reason why it takes up its abode in it, and why it is not seen in those regions of the south of Africa where the tree does not grow. This, however, is but a vague conjecture, and which the reports of the ancients seem to contradict.

"Its head is unquestionably the most beautiful part of its body. Its mouth is small; its eyes large and animated. Between the eyes, and above the nose, it has a very distinct and prominent tubercle. This is not a fleshy excrescence, but an enlargement of the bony part, the same as the two little bosses, or protuberances, with which its occiput is armed, and which rise as large as a hen's egg, one on each side of the mane, at its commencement. Its tongue is rough and terminates in a point. Each jaw has six grinders on each side, but the lower jaw only has eight cutting teeth in front, while the upper jaw has none.

"The hoof is cloven, has no heel, and much resembles that of the ox. It may be observed, however, at the first sight, that the hoof of the fore foot is larger than that of the hind foot. The leg is very slender; but the knee is swelled like that of the stumbling horse, because the animal kneels down to sleep. It has also a large callosity in the middle of the sternum, owing to its usually reposing on it.

"If I had never killed a Giraffe, I should have thought, with many other naturalists, that its hind legs were much shorter than the fore ones. This is a mistake: they bear the same proportion to each other, as is usual in quadrupeds. I say the same proportion as is usual, because in this respect, there are variations, even in animals of the same species. Every one knows, for instance, that mares are lower before than stallions

What deceives us in the Giraffe, and occasions this apparent difference between the legs, is the height of the withers, which may exceed that of the crupper from sixteen to twenty inches, according to the age of the animal; and which, when it is seen at a distance in motion, gives the appearance of much greater length to the fore legs.

"If the Giraffe stand still, and you view it in the front, the effect is very different. As the fore part of its body is much larger than the hind part, it completely conceals the latter; so that the animal resembles the standing trunk of a deep tree.

"Its gait, when it walks, is neither awkward nor unpleasing; but it is ridiculous enough, when it trots; for you would then take it for a limping beast, seeing its head, perched at the extremity of a long neck which never bends, swaying backwards and forwards, the neck and head playing in one piece between the shoulders as on an axis. However, as the length of the neck exceeds that of the legs at least four inches, it is evident that the length of the head too taken into the account, it can feed without difficulty, and of course is not obliged either to kneel down or to straddle with its feet, as some authors have asserted.*

"Its mode of defence, like that of the horse and other solidungulous animals, consists in kicking with the heels. But its hind parts are so light, and its jerks so rapid, that the eye cannot follow them. They are even sufficient to defend it against the lion, though they are unable to protect it from the impetuous attack of the tiger.

"Its horns are never employed in fight. I did not perceive it use them against my dogs; and these weak and useless weapons would seem but an error of Nature, if Nature could ever commit error, or fail in her designs.

"In their youth, the male and female Giraffes resemble each other in their exterior. A knot of long hair then terminates their obtuse horns; this peculiarity the female preserves for some time, but at the age of three years the male loses it. At first, the hide is of a light red, but it deepens in colour as the animal advances in age, and at length, it is of a yellow brown in the female, and of a brown bordering on black in the male. The male may, even at a distance, be distinguished from the female by this difference of colour. As to the arrangement and form of the spots, the skin varies in both sexes. The female does not stand so high as the male, and the frontal prominence is less marked. She has four teats; and, according to the account given by the natives, she has one young one at a birth, with which she goes twelve months.

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*It is, besides, unnecessary for the animal to kneel, as it feeds principally on the boughs of a species of acacia, which it draws down to its mouth with its long and flexible tongue.

THE LLAMA.

It is very singular that, although the Llama and the Paco are domesticated in Peru, Mexico, and Chili, as the horse is in Europe, or the camel in Arabia, we scarcely know any thing of them. Peru, according to Gregory de Bolivar, is the true and native country of the Llamas; they are conducted into other provinces, as New Spain, &c. but this is rather for curiosity than utility; but in Peru, from Potosi to Caracas, these animals are in great numbers, and make the chief riches of the Indians and Spaniards, who rear them. Their flesh is excellent food; their hair, or rather wool, may be spun into beautiful clothing; and they are capable of carrying heavy loads in the most rugged and dangerous ways; the strongest of them will travel with two hundred or two hundred and fifty pounds weight on their backs; their pace is but slow, and their journey is seldom above fifteen miles a day; but then they are sure, and descend precipices, and find footing among the most craggy rocks, where even men can scarcely accompany them; they commonly travel for five days together, when they are obliged to rest, which they do, of their own accord, for two or three days. They are chiefly employed in carrying the riches of the mines of Potosi. Bolivar affirms that, in his time, above three hundred thousand of these animals were in actual employ.

The growth of the Llama is very quick; and its life is but of short duration. This animal couples so early as at three years of age, and remains strong and vigorous till twelve; after which it begins to decline, and becomes entirely useless at fifteen. Their nature appears modelled on that of the Americans. They are gentle and phlegmatic, and do every thing with the greatest leisure and caution. When they stop on their journeys, they bend their knees very cautiously, in order to lower their bodies without disordering their load. As soon as they hear their driver whistle, they rise up again with the same precaution, and proceed on their journey; they feed as they go along, on the grass they meet with in their way, but never eat in the night, making use of that time to ruminate. The Llama sleeps, like the camel, with its feet folded under its belly, and ruminates in that posture. When overloaded or fatigued, it falls on its belly, and will not rise, though its driver strike it with his utmost force.

The Llama is about four feet high; its body, comprehending the neck and head, is five or six feet long; its neck alone is near three feet. The head is small and well proportioned, the eyes large, the nose somewhat long, the lips thick, the upper divided, and the lower a little depending: it wants the incisive and canine teeth in the upper jaw. The ears are four inches long, and move with great agility. The tail is seldom above eight inches long, small, straight, and a little turned up at the end. It is cloven-footed, like the ox; but the hoof has a kind of spear-like appendage behind, which assists the animal to move and support itself over precipices and rugged ways. The back is clothed with a short wool, as is the crupper and tail; but it is very long on the belly and sides. These animals differ in colour; some are white, others black, but most of them brown.

These useful, and even necessary animals, are attended with no expense to their masters; for, as they are cloven-footed, they do not require to be shod, nor do they require to be housed, as their wool supplies them with a warm covering. Satisfied with a small portion of vegetables and grass, they want neither corn nor hay to subsist them; they are still more moderate in what they drink, as their mouths are continually moistened with saliva, which they have in a greater quantity than any other animal. The natives hunt the *Guanacos*, or wild Llama, for the sake of its fleece. The dogs have much trouble to follow them;

and, if they do not come up with them before they gain the rocks, both the hunters and dogs are obliged to desist in their pursuit.

The Pacos are a subordinate kind to the Llamas, much in the same proportion as the ass is to the horse; they are smaller, and not so serviceable; but their fleece is more useful: their wool is fine and long, and is a sort of merchandize, as valuable as silk. The natural colour of the Pacos is that of a dried rose-leaf, which is so fixed that it undergoes no alteration under the hands of the manufacturers. They not only make good gloves and stockings of this wool, but also form it into quilts and carpets, which bring a higher price, and exceed those of the Levant.

The Pacos also resemble the Llamas in their form, excepting that their legs are shorter, and their muzzle thicker and closer. They inhabit and climb over the highest parts of the mountains. The snow and ice seem rather agreeable than inconvenient to them. When wild, they keep together in flocks, and run very swift; and, as soon as they perceive a stranger, they take flight, driving their young before them. The ancient monarchs of Peru rigorously prohibited the hunting of them, as they multiply but slowly; but, since the arrival of the Spaniards in these parts, their number is greatly decreased, so that at present there are very few remaining. The flesh of these animals is not so good as that of the Guanacos; and they are only sought after for their fleece, and the bezoar they produce. The method of taking them proves their extreme timidity, or rather their weakness. The hunters having driven the flock into a narrow passage, across which they have stretched a rope about four feet from the ground, with a number of pieces of linen or cloth hanging on it, the animals are so intimidated at these rags agitated by the wind, that they stop. and, crowding together in a heap, the hunters kill great numbers of them with the greatest ease; but if there are any Guanacos among the flock, which are less timid than the Pacos, they leap over the rope with great agility. The example is immediately followed by the whole flock, and they escape the stratagem of their pursuers.

With respect to the domestic Pacos, they are used to carry burdens, like the Llamas; but, being smaller and weaker, they carry much less weight. They are likewise of a more stubborn nature; and, when once they rest with their load, they will suffer themselves to be cut to pieces sooner than rise. The Indians have never made use of the milk of these animals, as they have scarcely enough to supply their own young. The great profit derived from their wool has induced the Spaniards to endeavour to naturalize them in Europe: they have transported them into Spain, in hopes to raise the breed in that country; but, the climate not agreeing with their nature, not one of them lived. We are, nevertheless, persuaded that these animals, which are more valuable than the Llamas, might thrive upon our mountains, especially upon the Pyrenean. Those who brought them into Spain did not consider that they can exist, even in Peru, only in the cold regions; that is, on the top of the highest mountains; that they are never to be found in the valleys, and die if brought into hot countries; that consequently, in order to preserve them, they should be landed, not in Spain, but in Scotland, and even in Norway, and with greater certainty at the foot of the Pyrenean, Alpine, or other mountains, where they might climb and attain to the region that most agrees with their nature.

The Llama is in general a timid and docile animal. If teased or ill treated, however, they become spiteful. Their mode of manifesting their anger is singular; it consists in darting their saliva in considerable quantity upon the person who offends them. They will cover with it a surface of three or four yards in extent.

The Vicuna, the wool of which is very valuable, is smaller than the Llama; its limbs are more neatly formed, and it has no protuberance on the breast. It is of a reddish brown on the upper part of the body, and whitish on the lower.

"The Llamas (says the author of The Menageries) form a secondary group of camels, offering to the eye of the naturalist very small anatomical differences of construction from that of the camel, properly so called. The foot of the Llama is not, like that of the camel, covered with an elastic sole, which joins the two toes. From the absence of this entire sole, the species of South America is enabled to climb the precipices of the Andes, which are its native region, the toes having strong nails, each of which has a thick cushion, or pad, below. The Llama also wants the second canine tooth in the lower jaw; but this difference is not, by some, considered such as to require a separation of the genus—for deer, of various species, have the same deviation from the general type. Again, the absence of the hump in the Llama species is not an anatomical difference which constitutes a character; for, as the skeleton of the Bactrian camel with two humps does not differ from that of the Arabian with one, so does the bones of the arrangement of the Llama agree precisely with the conformation of the camel. The zebu is an ox, although he has a hump. The ears of the Llama are longer, and the tail is shorter, than those of the camel. The similarities which determine the genus to which the camels and the Llamas belong, are principally these:—1. Each species has very remarkable peculiarities connected with the economy of their reproduction, in which they differ from all other animals. 2. The camel and the Llama differ also from every other species of the class of ruminating animals, in the want of horns, and in having two large incisive teeth on each side of the upper jaw. 3. The stomachs of the camel and the Llama are, in some degree, similarly constructed. Father Feuillee has described the stomach of the Llama; and maintains that it has not only a large reservoir for carrying water, but that, like the stomach of the camel, it has the same machinery for allowing the separation of solid from liquid aliment. Sir Everard Home, however, describes this portion of the Llama's stomach as only partially resembling that of the camel. He says, "the stomach has a portion of it, as it were, intended to resemble the reservoirs for water in the camel; but these have no depth, are only superficial cells, and have no muscular apparatus to close their mouths; and allow the solid food to pass into the fourth cavity, or truly digesting stomach, without going into these cells." But that the Llama has an internal mechanism for retaining water, or secreting a liquid substance, is certain; for, on the summit of the Andes, they are far above any lakes; and it has been observed that, in a state of domestication, they never exhibit a desire to drink whilst they can obtain green pasture. 4. The Llama, according to Molina (*Storia Nat. del Chili*), has a conformation resembling the camel's hump, being provided with an excess of nutritive matter, which lies in a thick bed of fat under the skin, and is absorbed as a compensation for an occasional want of food. These remarkable similarities certainly warrant naturalists in classing the camel and the Llama in the same genus, although they differ both in size and form. They are each evidently fitted by nature for the endurance of great hardships and privations—the one amidst the sands of the desert, under a burning sun—the other on the wastes of some of the loftiest mountains of the world, with a region of perpetual snow above them. The slight variations in their conformation, such as that of the foot, are modifications of nature which fit them for their respective localities. A habitation among the rocks would be mechanically impossible for the camel; whilst the burning plains would be as little suited to the Llama. But each is adapted to exist in a very arid and sterile region; and their habits are created by their peculiar organization."

THE UNAU AND THE AI.

THESE two animals have the epithet of *Sloth* given to them both by most authors, on account of their slowness, and the difficulty with which they walk. The Unau, or two-toed Sloth, has no tail, and only two nails on the fore feet. The Ai, or three-toed Sloth, has a short tail, and three nails on every foot. The nose of the Unau is likewise much longer, the forehead higher, and the ears longer than those of the Ai. It differs also in the hair. As for its interior, its viscera are both formed and situated differently; but the most distinctive, and, at the same time, the most singular character, is, that the Unau has forty-six ribs, while the Ai has but twenty-eight. This alone supposes two species, quite distinct one from the other; and these forty-six ribs, in an animal whose body is so short, is a kind of excess or error in nature; for, even in the largest animals, and those whose bodies are relatively longer than they are thick, not one of them is found to have so many. The elephant has only forty the dog twenty-six, and the human species twenty-four, &c. This difference in the construction of the Unau and the Ai supposes a greater distance between these two kinds than there is between that of the cat and the dog, which have the same number of ribs; for the external differences are nothing in comparison with the internal ones, which are the causes of the others. These animals have neither incisive nor canine teeth; their eyes are dull and heavy; their mouths wide and thick; their fur coarse and staring, and like dried grass; their thighs seem almost disjointed from the haunch; their legs very short, and badly shaped; they have no soles to the feet, nor toes separately moveable, but only two or three claws excessively long, and crooked downwards and backwards. Unfurnished with teeth, they cannot seize any prey, nor feed upon flesh, nor even upon vegetable food. Reduced to live on leaves and wild fruits, they take up a long time in crawling to a tree, and are still longer in climbing up to the branches. During this slow and painful labour, which sometimes lasts many days, they are obliged to support the most pressing hunger; and when, at length, one of them has accomplished its end, it fastens itself to the tree, crawls from branch to branch, and, by degrees strips the whole tree of its foliage. In this manner it remains several weeks, without moistening its dry food with any liquid; and when it has consumed the store, and the tree is entirely naked, yet unable to descend, it continues on till hunger presses, and that becoming more powerful than the fear of danger or death, it drops, like a shapeless, heavy mass, to the ground, without being capable of exerting any effort to break the violence of its fall.

On the ground, these animals are exposed to all their enemies; and, as their flesh is not absolutely bad, they are killed by men and beasts of prey. They seem to multiply but little; or, if they produce very often, it is only a small number, as they are furnished but with two teats. Every thing concurs, therefore, to their destruction, and the species supports itself with great difficulty. It is true that, although they are slow, heavy, and almost incapable of motion, yet they are hardy, strong, and can abstain a long time from food: covered also with a thick and coarse fur, and unable scarcely to move, they waste but little, and fatten by rest, however poor and dry their food is. Although they have neither horns on their heads, nor hoofs to their feet, nor incisive teeth in the lower jaw, they are, notwithstanding, among the number of ruminating animals, and have, like them, four stomachs; so that they consequently, can compensate for the quality of their food by the quantity they take at a time; and what is still more singular is, that, instead of having, like other ruminating animals, very long intestines, theirs are very short, like those of the carnivorous kind.

Both these animals belong to the southern parts of the New Continent, and are never to be met with in the Old. The Unau, as well as the Ai, is to be met with in the deserts of America, from Brazil to Mexico; but they have never inhabited the northern countries. They cannot endure cold nor rain; the change from wet to dry spoils their fur, which then resembles badly dressed hemp, rather than wool or hair.

Such is the description given of the Sloth, by Buffon and other naturalists; and, judging of it from such a representation, it is not wonderful that the animal has become proverbial as one of the most sluggish and wretched of the whole brute creation. It happens, however, that this description of its habits and sufferings is sadly at variance with truth. Mr. Waterton, who, in his numerous and protracted journeys through the woods of South America, had abundant opportunities of studying the natural history of the Sloth, has shown the incorrectness of preceding writers upon this subject.

"Let us turn our attention (says he) to the Sloth, whose haunts have hitherto been so little known, and probably little looked into. Those who have written on this singular animal have remarked that he is in a perpetual state of pain; that he is proverbially slow in his movements; that he is a prisoner in space; and that, as soon as he has consumed all the leaves of the tree upon which he has mounted, he rolls himself up in the form of a ball, and then falls to the ground. This is not the case.

"If the naturalists who have written the history of the Sloth had gone into the wilds, in order to examine his haunts and economy, they would not have drawn the foregoing conclusions; they would have learned that, though all other quadrupeds may be described while resting on the ground, the Sloth is an exception to this rule, and that his history must be written while he is in the tree.

"This singular animal is destined by nature to be produced, to live, and to die, in the trees; and, to do justice to him, naturalists must examine him in his upper element. He is a scarce and solitary animal, and, being good food, he is never allowed to escape. He inhabits remote and gloomy forests, where snakes take up their abode, and where cruelly stinging ants and scorpions, and swamps, and innumerable thorny shrubs and bushes, obstruct the steps of civilized man. Were you to draw your own conclusions from the descriptions which have been given of the Sloth, you would probably suspect that no naturalist had actually gone into the wilds with the fixed determination to find him out and examine his haunts, and see whether Nature has committed any blunder in the formation of this extraordinary creature, which appears to us so forlorn and miserable, so ill put together, and so totally unfit to enjoy the blessings which have been so bountifully given to the rest of animated nature; for, as it has formerly been remarked, he has no soles to his feet, and he is evidently ill at ease when he tries to move on the ground; and it is then that he looks up in your face with a countenance that says, 'Have pity on me, for I am in pain and sorrow.'

"It mostly happens that Indians and Negroes are the people who catch the Sloth, and bring it to the white man. Hence it may be conjectured that the erroneous accounts we have hitherto had of the Sloth have not been penned down with the slightest intention to mislead the reader, or give him an exaggerated history, but that these errors have naturally arisen by examining the Sloth in those places where Nature never intended that he should be exhibited.

"However, we are now in his own domain. Man but little frequents these thick and noble forests, which extend far and wide on every side of us. This, then, is the proper place to go in quest of the Sloth. We will first take a near view of him By obtaining a knowledge of his anatomy, we shall be enabled to account for his movements hereafter, when we see him in his proper haunts. His fore legs, or, more correctly speaking, his arms, are apparently much too long, while his hind legs are very short, and look as if they could be bent almost to the shape of a corkscrew. Both the fore and hind legs, by their form, and by the manner in which they are joined to the body, are quite incapacitated from acting in a perpendicular direction, or in supporting it on the earth, as the bodies of other quadrupeds are supported, by their legs. Hence, when you place him on the floor, his belly touches the ground. Now, granted, that he supported himself on his legs like other animals, nevertheless he would be in pain, for he has no soles to his feet, and his claws are very sharp and long, and curved; so that, were his body supported by his feet, it would be by their extremities; just as your body would be were you to throw yourself on all fours, and try to support it on the ends of your toes and fingers—a trying position. Were the floor of glass, or of a polished surface, the Sloth would actually be quite stationary; but as the ground is generally rough, with little protuberances upon it, such as stones, or roots of grass, &c., this just suits the Sloth, and he moves his fore legs in all directions, in order to find something to lay hold of; and when he has succeeded, he pulls himself forward, and is thus enabled to travel onwards, but, at the same time, in so tardy a manner as to acquire him the name of Sloth.

"Indeed, his looks and his gestures evidently betray his uncomfortable situation; and, as a sigh every now and then escapes him, we may be entitled to conclude that he is actually in pain.

"Some years ago I kept a Sloth in my room for several months. I often took him out of the house, and placed him upon the ground, in order to have an opportunity of observing his motions. If the ground were rough, he would pull himself forwards by means of his fore legs, at a pretty good pace, and he invariably shaped his course towards the nearest tree. But if I put him upon a smooth and well trodden part of the road, he appeared to be in trouble and distress: his favourite abode was the back of a chair; and, after getting all his legs in a line upon the topmost part of it, he would hang there for hours together, and often, with a low and inward cry, would seem to invite me to take notice of him.

"The Sloth, in its wild state, spends its whole life in the trees, and never leaves them but through force or accident. An all-ruling Providence has ordained man to tread on the surface of the earth, the eagle to soar in the expanse of the skies, and the monkey and squirrel to inhabit the trees: still these may change their relative situations without feeling much inconvenience; but the Sloth is doomed to spend his whole life in the trees; and, what is more extraordinary, not *upon* the branches, like the squirrel and the monkey, but *under* them. He moves suspended from the branch, he rests suspended from it, and he sleeps suspended from it. To enable him to do this, he must have a very different formation from that of any other known quadruped.

"Hence, his seemingly bungled conformation is at once accounted for; and, in lieu of the Sloth leading a painful life, and entailing a melancholy and miserable existence on its progeny, it is but fair to surmise that it enjoys life just as much as any other animal, and that his extraordinary formation and singular habits are but further proofs to engage us to admire the wonderful works of Omnipotence.

"It must be observed, that the Sloth does not hang head downwards like the vampyre. When asleep, he supports himself on a branch parallel to the earth. He first seizes the branch with one arm, and then with the other; and, after that, brings up both his legs, one by one, to the same branch; so that all four are in a line; he seems perfectly at rest in this position. Now, had he a tail, he would be at a loss to know what to do with it in this position: were he to draw it up with his legs, it would interfere with them; and were he to let it hang down, it would become the sport of the winds. Thus his deficiency of tail is a benefit to him; it is merely an apology for a tail, scarcely exceeding an inch and a half in length.

"I observed when he was climbing, he never used his arms both together, but first one and then the other, and so on alternately. There is a singularity in his hair, differen from that of all other animals, and I believe, hitherto unnoticed by naturalists; his hair is thick and coarse at the extremity, and gradually tapers to the root, where it becomes fine as the finest spider's web. His fur has so much the hue of the moss which grows on the branches of the trees, that it is very difficult to make him out when he is at rest.

"The male, of the three-toed Sloth, has a longitudinal bar of very fine black hair on his back, rather lower than the shoulder-blades, on each side of this black hair their is a space of yellow hair, equally fine; it has the appearance of being pressed into the body, and looks exactly as if it had been singed. If we examine the anatomy of his fore legs, we shall immediately perceive by their firm and muscular texture, how very capable they are of supporting the pendent weight of his body, both in climbing and at rest; and, instead of pronouncing them a bungled composition, as a celebrated naturalist has done, we shall consider them as remarkably well calculated to perform their ordinary functions.

"As the Sloth is an inhabitant of forests within the tropics, where the trees touch each other in the greatest profusion, there seems to be no reason why he should confine himself to one tree alone for food, and entirely strip it of its leaves. During the many years I have ranged the forests, I have never seen a tree in such a state of nudity; indeed I would hazard a conjecture, that by the time the animal has finished the last of the old leaves, there would be a new crop on the part of the tree he had stripped first, ready for him to begin again, so quick is the process of vegetation in these countries.

"There is a saying among the Indians, that when the wind blows, the Sloth begins to travel. In calm weather he remains tranquil, probably not liking to cling to the brittle extremity of the branches, lest they should break with him in passing from one tree to another; but as soon as the wind rises, the branches of the neighbouring trees become interwoven, and then the Sloth seizes hold of them, and pursues his journey in safety. There is seldom an entire day of calm in these forests. The trade wind generally sets in about ten o'clock in the morning, and thus the Sloth may set off after breakfast, and get a considerable way before dinner. He travels at a good round pace; and were you to see him pass from tree to tree, as I have done, you would never think of calling him a Sloth.

"Thus it would appear that the different histories we have of this quadruped are erroneous on two accounts: first that the writers of them, deterred by difficulties and local annoyances, have not paid sufficient attention to him in his native haunts; and, secondly, they have described him in a situation in which he was never intended by nature to cut a figure, I mean on the ground. The Sloth is as much at a loss to proceed on his journey upon a smooth and level floor, as a man would be who had to walk a mile in stilts upon a line of feather-beds.

"One day, as we were crossing the Essequibo, I saw a large two-toed Sloth on the ground upon the bank; how he got there nobody could tell: the Indian said he had never surprised a Sloth in such a situation before; he would hardly have come there to drink, for both above and below the place, the branches of the trees touched the water, and afforded him an easy and safe access to it. Be this as it may, though the trees were not above twenty yards from him, he could not make his way through the sand time enough to escape before we landed. As soon as we got up to him, he threw himself on his back, and defended himself in gallant style with his fore legs. 'Come, poor fellow,' said I to him, 'if thou hast got into a hobble to day, thou shalt not suffer for it: I'll take no advantage of thee in misfortune; the forest is large enough both for thee and me to rove in: go thy ways up above, and enjoy thyself in these endless wilds; it is more than probable thou wilt never have another interview with man. So, fare the well.' On saying this, I took up a large stick which was lying there, held it for him to hook on, and then conveyed him to a high and stately mora. He ascended with wonderful rapidity, and in about a minute he was almost at the top of the tree. He now went off in a side direction, and caught hold of the branch of a neighbouring tree; he then proceeded towards the heart of the forest; I stood looking on, lost in amazement at his singular mode of progress. I followed him with my eye till the intervening branches closed in betwixt us; and then I lost sight or ever of the two-toed Sloth. I was going to add, that I never saw a Sloth take to his heels in such earnest, but the expression will not do, for the Sloth has no heels."

THE SURIKAT.

This animal is a native of the Cape of Good Hope and of Java. It is very lively and subtle; it sometimes walks on its hinder legs, and often sits upright on them, with its fore paws hanging down by the side of the body. Its head is then erect, and moves upon the neck as on a pivot. It is not so large as a rabbit, and nearly resembles the marmose in size; its tail is somewhat longer, and its snout is more prominent and raised. It is more like the coati than any other animal. Its character likewise is nearly original, since it neither belongs to the coati nor the hyæna. These two are the only animals which have four toes to every foot.

This animal eats raw meat with eagerness, and particularly poultry and mice. It is a great enemy to the cockroach. It is fond of fish, and still more of eggs. It will eat neither fruit nor bread. It makes use of its fore feet, like the squirrel, to carry its food to its mouth; it laps its drink like a dog, and will not touch water, unless it is lukewarm. Of one in the French king's collection, its common drink was its own urine, although of a very strong smell. It did not chew its food, but often scratched the brick or plastered walls with its nails. It was so well tamed, that it answered to its name when called; it went about the house like a cat, and had two voices; one like the barking of a young dog, when it was left long alone, or heard an unusual noise; on the contrary, when it was caressed, or when it showed some token of pleasure, it made a noise as strong as that of a rattle briskly turned. It was a female animal, and only lived one winter, notwithstanding all the care that was taken to feed and keep it warm.

THE TARSIER

Is an animal remarkable for the length of its hind legs, which are longer than the rest of its whole body

The bones of the feet, and especially those which compose the upper part of the tarsus, are of an extraordinary size; and it is from this very character we have taken its name. It has five toes to every foot· it has, as I may say, four hands; for the toes are very long, and sufficiently divided: the largest of those behind, or the thumb, is terminated by a flat claw; and, although the claws of the other toes are pointed, they are, at the same time, so short and so small, that they do not prevent the animal from using its fore feet like hands. The jerboa, on the contrary, has only four toes, and four long and crooked claws, on its fore feet: and, instead of a thumb, it has only a tubercle without any claw: but, what removes it farther from our Tarsier, is, that it has only three fingers, or three great claws, on the hind feet. The Tarsier is found in some remote islands of India; particularly in Amboyna. One species is a native of Madagascar.

THE PHALANGER.

These animals, which have been sent to us by the name of *Surinam Rats*, have much less affinity with rats, than with the animals of the same climate of which we have given the history, under the names of the *marmose* and *cayopollin*. As it has never been named by any artist or traveller, we have denominated it from its character, which is totally different from that of any other animal, and have called it *Phalanger* from its *phalanges* being singularly formed, and because its two fore toes are conjoined in such a manner that this double toe appears like a hoof, separated only near the claws; the thumb is separated from the fingers, and has no claw at its extremity.

These animals vary in the colour of the hair; some species are about the size of a small rabbit, or a very large rat, and are remarkable for the excessive length of their tail, snout, and the form of their teeth, which alone is sufficient to distinguish the Phalanger from the marmose, the surikat, the rat, and every other species of animals to which it may be supposed to relate. The Fox Phalanger, to which White gives the name of the Vulpine Opossum, is more than three feet and a half in length. The Dwarf Phalanger, on the contrary, which is found on an island near Van Dieman's Land, is not larger than a mouse.

THE COQUALLIN.

This animal was sent from America, by the name of the *Orange-coloured Squirrel.* It is, however, not a squirrel, although sufficiently resembling it by the shape of the tail; for it not only differs by many external characters, but also by its nature and manners.

The Coquallin is much larger than the squirrel; it is a beautiful animal, and very remarkable for its colour, its belly being of a fine yellow, and its head, as well as body, varied with white, black, brown, and orange; it covers its back with its tail, like the squirrel, but has not, like that animal, small brushes of hair at the tips of the ears: it never climbs up any trees, but dwells in the hollows, and under the roots of trees, like the garden squirrel. In such places, it builds its nest, and rears up its young; it likewise stores its little habitation with corn and fruit, to feed on during the winter; it is a jealous and cunning animal, and so exceedingly wild, that it is impossible to be tamed.

The Coquallin is only found in the southern parts of America; the white and orange coloured squirrels of the East Indies are much smaller, and their colours uniform. These are true squirrels, which climb up trees, and produce their young on them; while the Coquallin, and the American suisse, burrow under ground, like rabbits, and have no other affinity with the squirrel, than a resemblance in the external form. M. Frederic Cuvier considers it as nothing more than a variety of the sciurus capistratus.

THE HAMSTER RAT.

This animal, which is also called the German Marmot, is about the size of the brown rat, but much thicker. Its colour is reddish brown above, and black beneath; there are three large oval white spots on each side of the body. The ears are somewhat large. But the peculiarity which distinguishes it is, that there are two pouches or receptacles for food on each side of its mouth. These are not visible externally when empty;

but, when distended, they resemble a pair of tumid bladders, with a smooth, veiny surface, which the fur of the cheeks conceals. The pouches of one which Dr. Russel dissected, were found stuffed with French beans, arranged lengthwise, in such compact and accurate order, that it was exceedingly difficult to conceive how they had been so placed. When loosely laid on a table, they formed a heap thrice the bulk of the animal's body. Austria, Silesia, and some parts of Germany, are their native places.

The Hamster is one of the most famous and most pernicious rats that exist. We have fed one of these animals for many months, says Buffon, and afterwards had it dissected, and observed, that the Hamster resembled more the water rat, than any other animal; it resembled it also in the smallness of its eyes, and the fineness of its hair; but its tail is not so long as that of a water rat; but, on the contrary, it is much shorter than that of the short-tailed mouse. All these animals live under the earth, and seem to be animated with the same instinct; they have nearly the same habits, and particularly that of collecting corn, &c., and making great magazines in their holes.

The habitations of the Hamsters are different, according to their sex and age, and also to the quality of the land they inhabit. That of the male Hamster is an oblique passage, and at the entrance is a portion of earth thrown up. At a distance from the entrance, there is a single hole, which descends in a perpendicular manner to the chambers or cavities of the habitation. There is no hillock of earth near that hole; which makes us presume, that the oblique entrance is made hollow from the outside, and that the perpendicular hole, by which they come out, is worked withinside, from the bottom to the top.

The habitation of the female has also an oblique passage, with two or three, and even eight perpendicular holes, by which the young ones may come in and go out. The male and the female have each their separate abode: that of the female is deeper than that of the male.

The perpendicular hole is the common passage for coming in and going out. By the oblique road, they throw out the earth they scratch up. This passage

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also has a gentle declivity into some of the cavities, and another more steep into others which serve for a free circulation of the air in this subterraneous habitation. The cavity where the female breeds her young contains no provision, but only a nest formed of straw or grass. The depth of the cavity is very different. The young Hamster, of a year old, makes its burrow only a foot deep, while the old animal often hollows it to the depth of four or five feet. All the cavities communicate together in one habitation, which is about eight or ten feet in diameter.

These animals store their magazines with dry clover, corn, and other grain; beans and peas they likewise provide themselves with; all these they are particularly careful to separate from the husk, which, with every other matter they do not make use of, they carry out of their habitation by this oblique passage.

The Hamster commonly gets in its winter provisions at the latter end of August. Its stores are not meant for a winter supply, it being torpid at that season, but for the preceding and following period. When it has filled its magazines, it covers them over, and shuts the avenues to them carefully with earth. This precaution renders the discovery of these animals very difficult. The heaps of earth which they throw up before the oblique passage, are the only marks to trace their habitations. The most usual method of taking them, is by digging them out of their holes, which is attended with much trouble, on account of the depth and extent of their burrows; however, a man versed in this business, commonly effects his purpose with good success. In autumn, he seldom fails of finding two good bushels of corn in each of their habitations; and he draws great profit from the skins of the animals. The Hamsters bring forth their young two or three times in a year, and seldom less than five or six each time. Some years there are great numbers of them to be seen, and in others, scarcely any to be met with. They multiply in great numbers when the seasons are wet, which causes a great scarcity of grain, by the devastation these animals make.

The back of the Hamster is commonly brown, and the belly black; however, there are some of a gray colour; and this difference may proceed from their age. Besides these, there are some often met with which are entirely black.

The Hamster begins to burrow at the age of six weeks, or two months; it never procreates, however, in the first year of its growth. There are numbers produced in one year, insomuch, that, in some parts of Germany, from their occasioning a dearth of corn, a reward is fixed on their heads. In one year, about eleven thousand skins, in another, fifty-four thousand, and in a third year eighty thousand, were produced at the Town Hall of Gotha, as vouchers to enable the bearers to receive the reward. They are likewise in such great numbers, that their fur is sold exceedingly cheap.

The polecat is a great enemy to the Hamsters, which he destroys in a great numbers; he not only pursues them on land, but follows them into their burrows, and feeds on them there.

The Hamster itself is one of the most inveterate enemies of its own kind. His life (says a recent naturalist) is divided between eating and fighting. He seems to have no other passion than that of rage; which induces him to attack every animal that comes in his way, without in the least attending to the strength of the enemy. Ignorant of the art of saving himself by flight, rather than yield he will allow himself to be beaten in pieces with a stick. If he seizes a man's hand he must be killed before he will quit his hold. The magnitude of the horse terrifies him as little as the address of the dog, which last is fond of hunting him. When the Hamster perceives a dog at distance, he begins by emptying his cheek-pouches, if they happen to be filled with grain; he then blows them up so prodigiously, that the size of his head and neck greatly exceeds that of the rest of the body. He raises himself on his hind legs, and thus darts upon the enemy. If he catches hold, he never quits his foe but with the loss of life. This ferocious disposition prevents the Hamster from being at peace with any animal whatever. He even makes war against his own species. When two Hamsters meet, they never fail to attack each other, and the stronger always devours the weaker. A combat between a male and female commonly lasts longer than that between two males. They begin by pursuing and biting each other; then each of them retires aside, as if to take breath. After a short interval they renew the combat, and continue to fight till one of them falls.

THE BOBAC, AND OTHER MARMOTS.

THE name of the *Strasbourg Marmot* has been affixed to the hamster, and that of the ***Poland Marmot*** to the Bobac; but it is certain, that the hamster is not a Marmot; and it is also probable that the Bobac is one, as it only differs from the Marmot of the Alps, by the colour of its fur, which is not quite so gray. There is a great claw, or toe, to the fore feet of the hamster, while the Marmot has only four toes to each foot; but in other respects it perfectly resembles it. It is the same with respect to the Canadian Marmot, or Monax, which some travellers have termed the *Whistler*. It only seems to differ from the Marmot by the tail, which is thicker of hair.

The Bobac constructs burrows obliquely in the ground, of the depth of two, three, or four yards, and consisting of several galleries. Where the soil is hard or rocky, thirty or forty animals work in concert. Towards the approach of winter, they fill their burrows with the finest hay. They are good natured and timid, but when driven to defend themselves they bite severely. It is easy to tame them.

The Canadian Monax, the Poland Bobac, and the Alpine Marmots, are, indeed, probably all the same kind of animal, under different denominations. As this species prefers the coldest and highest mountains in Poland, Russia, and other parts of the north of Europe, no wonder it is found in Canada, where it is only somewhat less than in Europe.

The Siberian animal also called by the Russians *Jevras Chka*, is a kind of Marmot, still less than the Canadian Monax.

JERBOA,

Is a generical name, which we make use of in this place, to denote those remarkable animals whose legs are extremely disproportionate. In many particulars, both of habit and conformation, the Jerboa bears a striking resemblance to the kanguroo tribe, though, according to the Linnæan system, it does not class with it. Like the kanguroo, it has long hind legs, which it uses in leaping. It seldom goes on all fours; and its fore legs, which are very short, are almost wholly employed in holding its food, and in making its burrows. There are four distinct species or varieties of this kind. First, the *Tarsier*, of which we have already spoken, and which is certainly a particular species, as its toes are made like those of the monkey, having five on each foot. Secondly, the *Jerboa*, whose feet are like the *fissipedes*, with four claws on those before, and three on those behind. Thirdly, the *Alagtata*, whose feet are formed like those of the Jerboa, with this difference, that they have five toes on the fore, and three on the hinder feet, with a spur or a kind of thumb, or a fourth toe, much shorter than the other. Fourthly, the *Daman Israel*, or *Lamb of Israel*, which has four toes to the fore feet, and five to the hinder, which may possibly be the same animal which Linnæus has described by the name of *Mus Longipes*.

The head of the Jerboa is sloped somewhat in the manner of a rabbit; but the eyes are larger, and the ears shorter, though elevated and open, with respect to its size; its nose and hair are of a flesh colour, its mouth short and thick, the orifice of the mouth very narrow, the upper jaw, very full, the lower narrow and short, the teeth like those of the rabbit; the mustaches are composed of long black and white hairs; the fore feet are very short, and never touch the ground; they are furnished with four claws, which are only used as hands to carry the food to the animal's mouth; the hind feet have but three claws, the middle one longer than the other two; the tail is three times as large as its body, and is covered with short stubborn hair, of the same colour as that on the back, but tufted at the end with longer and softer hair; the legs, nose, and eyes are bare, and of a flesh colour; the upper part of the head and back are covered with an ash-coloured hair; the sides, throat, and belly are whitish; and below the loins, and near the tail, there is a large, black, transversal band, in form of a crescent. While leaping, the Jerboa stretches out its tail, but while standing or walking, it carries it in the form of an S, the lower part touching the ground.

These little animals commonly conceal their hands, or fore feet, with their hair; so that they are said by some to have only hinder feet. When they move from one place to another, they do not walk, that is, advance one foot before the other, but jump, or bound, about four or five feet at a time: this they do with the greatest ease and swiftness, holding themselves erect, after the manner of birds when they hop on the ground. Instead, however, of proceeding straight forward, it jumps first to one side, and then to the other. Such is its agility, that even a greyhound can scarcely kill it. They rest themselves in a kneeling posture, and only sleep in the day. In the night time, they seek for their food like hares, and, like them, feed on grass, corn, and other grain. They are of a gentle nature, but not to be tamed beyond a certain limit. They burrow like rabbits, and in much less time. The excavations which it forms are many yards long, oblique, and winding, but not more than half a yard from the surface of the ground. It is fond of warmth, making its nest of the finest and most delicate herbage; and seems sensible of the approach of bad weather by wrapping itself up close in hay, with its head between its thighs. I sleeps during winter, without nutriment. The Jerboa breeds several times in the summer, and usually brings forth seven or eight young ones at a litter. The flesh is reckoned one of the greatest of delicacies by the Arabs. They are found in Syria, Phœnicia, Barbary, &c.

THE ICHNEUMON.

From the tip of the nose to the end of the tail, the Ichneumon is from twenty-four to forty-two inches in length; nearly half of which is occupied by the tail. At the base, the tail is very thick; it tapers gradually towards the point, which is slightly tufted. The eyes are of a bright red; the ears almost naked, small and rounded: the nose is long and slender. The legs are short. The hair is hard and coarse, and of a pale reddish gray, each hair being mottled with brown or mouse colour.

This animal is domestic in Egypt, like our cat; and, like that, is serviceable in destroying rats and mice: but its inclination for prey and its instinct are much stronger and more extensive than the cat's; for it hunts alike birds, quadrupeds, serpents, lizards, and insects: it attacks every living creature in general, and feeds entirely on animal flesh; its courage is equal to the sharpness of its appetite; it is neither frightened at the anger of the dog, nor the malice of the cat, nor even dreads the bite of the serpent: it pursues them with eagerness, and seizes on them, however venomous they may be. As soon as it begins to feel the impressions of their venom, it immediately goes in search of antidotes, and particularly a root that the Indians call by its name, and which, they say, is one of the most powerful remedies in nature against the bite of the viper. It sucks the eggs of the crocodile, as well as those of fowls and birds; it also kills and feeds on young crocodiles, when they are scarcely come out of their shell; and, as fable commonly accompanies truth, it has been currently reported, that, by virtue of this antipathy, the Ichneumon enters the body of the crocodile, when it is asleep, and never quits it till he has devoured its entrails. It was formerly deified by the Egyptians, for its serviceable qualities.

Naturalists have supposed many kinds of Ichneumons, because there are some larger than others, and of a different coloured hair; but, if we consider, that, being frequently reared in houses, they have, like other domestic animals, undergone varieties, we shall readily perceive, that this diversity of colour, and this difference of size, only indicate simple varieties, not sufficient to constitute a separate species. It also appears that the Ichneumons in Egypt, which may be said to be domestic, are longer than those in India which are in a wild state.

The Ichneumon lives very willingly by the sides of rivers, inundations, and other waters, and is reported to swim and dive occasionally, like an otter, and to remain for a considerable time beneath the liquid element. It quits its habitation to seek its prey near habitable places. It sometimes carries its head erect, foreshortens its body, and raises itself upon its hind egs; at other times it creeps and lengthens itself like a serpent; it often sits upon its hind feet, and often springs upon its prey; its eyes are lively, and full of fire; its aspect is beautiful, the body very active, the legs short, the tail thick and very long, and the hair rough and bristly. Both male and female have a remarkable orifice, independent of the natural passages. It is a kind of pocket, into which an odoriferous liquor filters. They pretend, that it opens this bag, or pocket, to refresh itself when too hot. Its noise is very sharp, and its mouth narrow, which prevents it from seizing and biting any thing very large; but this defect is amply supplied by its agility, courage, and by its power; it very easily strangles a cat, although much larger and stronger than itself; it often fights with dogs; and, of whatever size they are, it commonly gets the better of them. It may easily be domesticated, and is then more tame, obedient, and affectionate than a cat.

THE GRAY ICHNEUMON,

Which is the Nems of Buffon, is a native of India, though he erroneously assigns Africa as the country to which it belongs. It is of a pale gray, the hairs being for the major part of a dirty yellowish white, relieved by narrow rings of brown towards their extremities. The head and limbs are of a darker hue than the other parts. A specimen of this animal is now in the menagerie of the Tower. It possesses all the characteristic spirit and activity of the genus to which it belongs. On one occasion a dozen full grown rats were let loose in a room sixteen feet square, all of which this individual killed in little more than a minute

THE VANSIRE.

Those who have spoken of this animal have taken it for the ferret, which indeed it resembles in many respects, though it differs from it by characters strong enough to make it a distinct species. It is now arranged among the ichneumons. The Vansire has twelve teeth, or grinders, in its upper jaw, while the ferret has only eight. The Vansire also differs in the colour of its hair from all ferrets; although like every other animal which man is careful in rearing and increasing, those creatures vary much, both male and female. It is found at the Mauritius, and at Madagascar, by the natives of which latter island it is called Vohang-shira.

The animal called by some the *Weasel of Java*, and by others the *Ferret of Java*, is a kindred species to the Vansire.

THE FOSSAN

Is called by some travellers the *Genet of Madagascar;* but it is, in general, much smaller than the genet; and what proves it not to be of that kind, is, that it has no odoriferous bag, the essential attribute belonging to that animal. It has a slender body, covered with hair of an ash colour, mixed with tawny. The sides of the face are black; at the hind part of the head are four black lines, extending from thence towards the shoulders; the tail is long, and annulated with black. Its manners are much like those of our polecat; and, when the male Fossan is in heat, it emits a very strong smell like musk. It eats both flesh and fruit, but prefers the last, particularly bananas. It is a very wild animal, and very difficult to be tamed. The eye of the Fossan represents a black globe, very large in comparison with the size of its head, which gives this animal a mischievous look. It is a native of Madagascar, Guinea, Cochinchina, and the Philippine Isles. It is called the Berba in Guinea.

THE MAKI.

This name of Maki has been given to many different kinds of animals. The first class is the Mocock, or Macauco: the second is the Mongoos, commonly called the *Brown Maki* · and the third kind is the Vari, called by some the *Pied Maki.* They all have a considerable analogy with the monkey tribe, though they differ from it in some essential particulars. Like the monkeys, they belong to the quadrumana.

The *Macauco* (which is the ring-tailed lemur of Shaw) is a beautiful animal, remarkable for the largeness of its eyes, and the length of the hinder legs which by far exceed those before; by its beautiful an long tail, which is continually elevated and in motion, and upon which are upwards of thirty rings, alternately black and white, all very distinct and separate one from the other. It is gentle; and, although it greatly resembles the monkey in many particulars, it is not so malicious in its nature. It is a gregarious animal, commonly found in company in its natural state; in Madagascar, thirty or forty are seen herding together. It sleeps in a sitting posture, with its snout resting upon its breast; its body is no thicker than that of a cat; but is longer; and it appears larger, as the legs of the animal are very long. The hair is soft, and stands upright.

The *Mongoos* is less than the Macauco; but its hair is, like that, of a short and silken nature; but a little curled; the nose is also thicker, and much resembling that of the Vari. We had a Mongoos in our possession for several years; its coat was of a brown colour, the eyes yellow, the nose black, and the ears short. It had a custom of playing with and biting its tail, and had, by this method, lessened it by four or five of the last vertebræ. Whenever it got loose, it visited the shops in the neighbourhood, and would make free with fruit, sugar, sweetmeats, &c. to obtain which it would open the boxes. At such times, it was difficult to retake it; and it would bite those that attempted it, even its keeper.

The *Vari* (which is the lemur macaco of Linnæus) is much larger, stronger, and wilder than the Macauco, and is said to be even exceedingly savage and mischievous in its free state. Travellers tell us, that these animals are as furious as tigers, and very difficult to be tamed; and that its voice is so very loud, that, when there are only two together in the woods, it might be imagined that the noise they made proceeded from a hundred. Others, however, with more appearance of truth, describe it as of a mild and indolent disposition. Its hair, in general, is much longer than that of the Macauco: and it has a kind of ruff round the neck, consisting of very long hair. In other respects its hair is black and white, and, although very long, stands nearly upright; its snout is thicker and longer than that of the Macauco; its ears much shorter, and edged with long hair; and its eyes are of so deep an orange colour, that, if not minutely inspected, they appear to be red.

The Macauco, the Mongoos, and the Vari, are all of the same country. They seem to be confined to Madagascar and the neighbouring islands.

THE WHITE HEADED MONGOOS.

Of this variety of the Mongoos there are now a male and female in the Tower Menagerie. "It is characterized (says Mr. Bennett) by the clear fulvous brown colour of the upper surface of the body and outer side of the limbs, gradually becoming lighter on the under and inner surfaces, and deepening in its shade towards the tail, the greater part of which is nearly black. The muzzle and the hands are bluish black. The male has the whole of the forehead, the sides of the cheeks, and the under part of the lower lip covered with a white fur, which in the female is of a blackish gray, and much less developed; her general colour is also of a lighter tinge. This remarkable difference would lead us to question the specific identity of the two animals, were we not assured by M. F. Cuvier, that he had verified the fact by what is usually regarded as an unequivocal test. Mr. M'Leay has, however, thrown considerable doubt upon the accuracy of the inference thus attempted to be drawn, by exhibiting to the Linnæan Society a female, in whom the white fur of the head was as distinctly developed as in her male companion. The whole of the species of this group require, in fact, an accurate revision."

The manners and habits of the Mongoos tribe are thus described by the same accurate and entertaining writer:—"The whole of the genus are natives of Madagascar and of two or three of the smaller islands in its immediate vicinity. They appear to occupy in that remarkable and very imperfectly known country the place of the monkeys, none of which have yet been detected within its precincts. They are said to live in numerous troops, upon the trees, and to feed upon fruits and insects; but their habits in a state of nature have not yet been observed with sufficient accuracy to enable us to form any clear idea of their mode of existence. In captivity, they are particularly tame, and good tempered, fond of being noticed, delighting in motion, and climbing and leaping with surprising agility. They are, however, in some degree nocturnal; and when undisturbed pass a considerable portion of the day in sleep. If alone, they roll themselves up in the form of a ball, and wind their long tail in a very curious manner round their body, apparently for the purpose of keeping themselves warm; for they are naturally chilly, and delight in basking in the rays of the sun, or in creeping as close as possible to the fire. When two of them are confined together, they interlace their limbs and tails after a singular fashion, and placing their heads in such a position as that each may, if disturbed, see what is going on behind the other's back, fall comfortably asleep."

THE BENGAL-LORIS, OR SLOW LEMUR.

The Lemurs are closely allied to the monkeys, by their habits and their hand-like paws. It is in the shape of the head, which has some resemblance to that of the dog, and in the great length of their hind legs, that they chiefly differ from them. So long are the hind legs, that, when the animals walk on all fours, their shoulders are much less elevated than their haunches. In climbing trees, this is of great advantage to them. Many of them are exceedingly active, and leap from branch to branch with a rapidity which almost baffles the eye to follow.

Not so, however, the Bengal Loris, which is so sluggish in its motions, that some have been erroneously induced to consider it as a sloth. It is about the size of a small cat, and has a flattish face, a nose rather sharp, and extremely prominent eyes; it is of a pale brown or mouse colour; round the eyes is a circle of dark brown, and along the middle of the back runs a stripe of the same colour. During the greatest part of the day it sleeps, or at least lies without motion.

One of these animals is described by the late Sir William Jones, in the fourth volume of the Asiatic Researches. "In his manners (says he) he was for the most part gentle, except in the cold season, when his temper seems wholly changed; and his Creator who made him so sensible of cold, to which he must often have been exposed even in his native forests, gave him, probably for that reason, his thick fur; which we rarely see on animals in these tropical climates. To me, who not only constantly fed him, but bathed him twice a week in water accommodated to the seasons, and whom he clearly distinguished from others, he was at all times grateful; but when I disturbed him in winter he was usually indignant, and seemed to reproach me with the uneasiness which he felt, though no possible precautions had been omitted to keep him in a proper degree of warmth. At all times he was pleased at being stroked on the head and throat, and he frequently suffered me to touch his extremely sharp teeth: but his temper was always quick; and when he was unseasonably disturbed, he expressed a little resentment, by an obscure murmur, like that of a squirrel; or a greater degree of displeasure by a peevish cry, especially in winter, when he was often as fierce, on being much importuned, as any beast of the woods.

"From half an hour after sunrise to half an hour before sunset, he slept without intermission, rolled up like a hedgehog; and, as soon as he awoke, he began to prepare himself for the labours of *his* approaching day, licking and dressing himself like a cat; an operation which the flexibility of his neck and limbs enabled him to perform very completely: he was then ready for a slight breakfast, after which he commonly took a short nap; but when the sun was quite set, he recovered all his vivacity.

"His ordinary food was the sweet fruit of this country; plantains always, and mangoes during the season; but he refused peaches, and was not fond of mulberries, or even of guiavas; milk he lapped eagerly, but was content with plain water. In general he was not voracious, but he never appeared satisfied with grasshoppers; and passed the whole night, while the hot season lasted, in prowling for them. When a grasshopper, or any insect, alighted within his reach, his eyes, which he fixed on his prey, glowed with uncommon fire; and, having drawn himself back, to spring on it with greater force, he seized the prey with both his fore paws, but held it in one of them while he devoured it. For other purposes, and sometimes even for that of holding his food, he used all his paws indifferently as hands, and frequently grasped with one of them the higher parts of his ample cage, while his three others were severally engaged at the bottom of it; but the posture of which he seemed fondest was to cling with all four of them to the wires, his body being inverted. In the evening, he usually stood erect for many minutes, playing on the wires with his fingers, and rapidly moving his body from side to side, as if he had found the utility of exercise in his unnatural state of confinement.

"A little before daybreak, when my early hours gave me frequent opportunities of observing him, he seemed to solicit my attention; and if I presented my finger to him, he licked or nibbled it with great gentleness, but eagerly took fruit when I offered it; though he seldom ate much at his morning repast: when the *day brought back his night*, his eyes lost their lustre and strength, and he composed himself for a slumber of ten or eleven hours.

"My little friend was, on the whole, very engaging; and when he was found lifeless, in the same posture in which he would naturally have slept, I consoled myself with believing that he died without much pain, and lived with as much pleasure as he could have enjoyed in a state of captivity."

THE JAVELIN BAT.

The animal in question we have denominated the *Javelin Bat*, from a sort of comb, or membrane, on its nose, which perfectly resembles the head of a lance. Although this character alone is nearly sufficient to distinguish it from all other animals, yet we can add some others, as its having scarcely any tail, and its hair and size being nearly like the common bat, with this difference, that instead of having six incisive teeth in the lower jaw, it has only four. This kind of Bat is very common in America, and never found in Europe.

There is another Bat in Senegal, which has also a membrane upon its nose, not in the form of a horseshoe, as in one species we have observed, or the head of a javelin, as in this, but in the shape of an oval leaf. These three Bats, being of different climates, are not simple varieties, but distinct and separate species.

Bats, which have, in other respects, great affinity with birds, by their power of flying, and by the strength of the pectoral muscles, seem to resemble them still more in these membranes, or combs, which they have on their face; for most birds have also combs, or membranes, about their beak, or head, which seem, in every respect, as superfluous as those of the Bat kind.

CHAPTER XX.

Of the Serval—The Ocelot—The Margay—The Jackal and the Adil—The Isatis—The Glutton—the Stinking Polecats—The Pekan and the Vison—The Sable—The Lemming—The Canadian Otter—The Seal—The Common Seal—The Ursine Seal—The Bottlenose Seal—The Sea Lion—The Walrus, or Morse—The Manati—The Whale-tailed Morse—The Round-tailed Manati—The Sea Ape Manati.

THE SERVAL.

This animal has been kept alive several years in the royal menagerie of France, by the name of the *Tiger Cat;* and we should have still remained ignorant of its true name, if M. de Montmirail had not discovered it in the account of an Italian voyage, which he has translated :—" The *Maraputia*, which the Portuguese in India call *Serval*," says Vincent Maria, " is a wild and ferocious animal, much larger than the wild cat, and something less than the civet, which it differs from by its head being rounder and thicker in proportion to its body, and its face sinking in about the middle of it. It resembles the panther in the colour of the hair, which is brown upon the head, back, and sides, and white upon the belly , also in the spots, which are distinct

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equally distributed, and less than those of the panther; its eyes are brilliant; its whiskers are composed of long and stiff bristles; its tail is short; its feet large, and armed with long and hooked claws. It lives among the mountains of India, and is very seldom seen on the ground; it remains almost continually upon high trees, where it catches birds, on which it feeds. It leaps also as nimbly as a monkey, and goes from one tree to another with such great address and agility, that it passes over a great space in a short time, and, we may say, only appears and disappears. It is ferocious in its nature, but flies at the sight of man."

Neither captivity, nor good or bad treatment, will tame or soften the ferocity of this animal. It seems to be the same creature as the tiger cat of Senegal and the Cape of Good Hope, which, according to the testimony of travellers, resembles our cat in its shape and size. "This animal," they say, "is four times as large as a cat, of a voracious nature, and feeds like the monkey, the rat," &c.

THE OCELOT.

In describing the Ocelot, serious mistakes have been committed by Buffon and other naturalists. It is to Mr. Bennett that we are indebted for the latest and most accurate description of this animal. Nearly equal in size to the lynx of Europe (says he), but shorter in its proportions and more graceful in its form, it holds, as it were, a middle station between the leopard and the domestic cat. Its body, when full grown, is nearly three feet in length, and its tail rather more than one; while its medium height may be reckoned at about eighteen inches. The ground colour of its fur is gray, mingled with a slight tinge of fawn, and on this it is elegantly marked with numerous longitudinal bands, the dorsal one being continuous and entirely black, and the lateral, to the number of six or seven on each side, consisting for the most part of a series of elongated spots with black margins, sometimes completely distinct, and sometimes running together. The centre of each of these spots offers a deeper tinge of fawn than the ground colour external to them; and this deeper tinge is also conspicuous on the upper part of the head and neck, and on the outside of the limbs, all of which parts are irregularly marked with full black lines and spots of various sizes. From the top of the head, between the ears, there pass backwards, towards the shoulders, two, or more frequently four, uninterrupted diverging bands, which are full black anteriorly, but generally bifurcate posteriorly, and enclose a narrow fawn coloured space within a black margin; between these there is a single longitudinal somewhat interrupted narrow black line, occupying the centre of the neck above. The ears are short and rounded, and externally margined with black, surrounding a large central whitish spot. The under parts of the body are whitish, spotted with black, and the tail, which is of the same ground colour with the body, is also covered with blackish spots. The tail of the specimen in the Tower does not exceed six or seven inches, but, as it ends abruptly, it has, in all probability, been shortened by some accident.

The animal in the Tower was sent from Trinidad, under the name of the Peruvian Tiger. It is extensively spread over the American continent, being found in the widely separated regions of Mexico and Paraguay, where it abides in the depths of the forests during the day, and giving chase at night to birds and small quadrupeds. As it is an active climber, it follows the birds even to their nests. "It is easily tamed (says Mr. Bennet) but seldom loses all trace of its natural ferocity. D'Azara, however, speaks of one which was so completely domiciliated as to be left at perfect liberty; it was strongly attached to its master, and never attempted to make its escape. The specimen in the Tower, which is a male, is perfectly good tempered, exceedingly fond of play, and has, in fact, much of the character and manners of the domestic cat. Its food consists principally of rabbits and of birds, the latter of which it plucks with the greatest dexterity, and always commences its meal with their heads, of which it appears to be particularly fond. It does not eat with the same ravenous avidity which characterizes nearly all the animals of its tribe."

THE MARGAY

Is much smaller than the ocelot. It resembles the wild cat in the size and shape of its body; its head only is more square, its snout longer, its ears rounder, and its tail longer; its hair also is shorter, and it has black streaks and spots on a brown ground. Its skin is fawn-coloured above, and whitish beneath, with longish spots of dark brown, disposed in fine lines, straight on the back, and oblique on the flanks. The shoulders are spotted with a deep reddish brown, and bordered with a black brown. The tail is irregularly annulated. It was sent us from Cayenne, by the name of the *tiger-cat;* and, in fact, it partakes of the nature of the cat and the jaguar. According to Fernandez, when this animal has arrived at its full growth, it is not quite so large as the civet; and, according to Marcgrave, whose comparison is juster, it is about the size of a wild cat, which it also resembles in its natural habits, living only upon fowls, and other small game; but it is very difficult to be tamed, and never loses its natural ferocity; it varies greatly in its colour, though commonly it is such as we have here described it. This animal is very common in Brazil and Guiana.

THE JACKAL AND THE ADIL.

We are not certain that these two names denote two animals of different species. We only know that the Jackal is a larger animal, which is more ferocious and difficult to be tamed than the Adil. As both the Jackal and the Adil, however, are natives of the same countries; as the species has not been altered by a long domesticity; and as there is a considerable difference in the size, and even in the nature of these animals; we shall look on them as two distinct species.

"In size (says Mr. Bennett) he is about equal to the common fox, but he differs from that equally troublesome animal in the form of the pupils of his eyes, which correspond with those of the dog and of the wolf; in the comparative shortness of his legs and muzzle; in his less tufted and bushy tail; and in the peculiar marking of his coat. The colouring of his back and sides consists of a mixture of gray and black, which is abruptly and strikingly distinguished from the deep and uniform tawny of his shoulders, haunches, and legs: his head is nearly of the same mixed shade with the upper surface of his body, as is also the greater part of his tail, which latter, however, becomes black towards its extremity; his neck and throat are whitish, and the under surface of his body is distinguished by a paler hue." The yellow which is about him is the reason why many authors have called the Jackal, the *golden wolf.*

As the species of the wolf approaches that of the dog, so the Jackal finds a place between them both. The *Jackal,* or *Adil,* as Belon says, *is a beast between the wolf and the dog.* To the ferocity of the wolf, it joins, in fact, a little of the familiarity of the dog. Its voice is a kind of a howl, mixed with barking and groaning; it is more noisy than the dog, and more voracious than the wolf; it never stirs out alone, but always in packs, of twenty, thirty, or forty; they collect together every day, to go in search of their prey; they make themselves formidable to the most powerful animals, by their number; they attack every kind of beasts or birds, almost in the presence of the human species; they abruptly enter stables, sheepfolds, and other places, without any sign of fear; and when they cannot meet with any other thing, they will devour boots, shoes, harnesses, &c. and what leather they have not time to consume, they take away with them. When they cannot meet with any live prey, they dig up the dead carcasses of men and animals. The natives are obliged to cover the graves of the dead with large thorns, and other things, to prevent them from scratching and digging up the dead bodies. The dead are buried very deep in the earth; for it is not a little trouble that discourages them. Numbers of them work together, and accompany their labour with a doleful cry; and, when they are once accustomed to feed on dead bodies, they run from country to country, follow armies, and keep close to the caravans. This animal may be styled the crow of quadrupeds; for they will eat the most putrid or infectious flesh: their appetite is so constant and so vehement, that the driest leather is savoury to them; and skin, flesh, fat, excrement, or the most putrefied animal, is alike to their taste.

THE ISATIS.

THIS animal, which is a species of fox (canis corsac), is very commonly seen in the northern countries, and but rarely found on this side sixty-nine degrees latitude; it is nearly two feet in length; it perfectly resembles the fox, in the form of its body, and the length of the tail; but its head is like that of a dog; its hair is softer than that of the common fox; its head is short in proportion to its body; it is broad towards the neck, and terminates in a sharp-pointed snout. Its ears are almost round. There are five toes and five claws to the fore feet, and only four toes and four claws to the hinder ones. The hair on every part of the body is about the length of two inches, smooth and soft as wool. The tail is black at the end, and so long that it touches the ground.

The voice of the Isatis partakes of the barking of the dog and the yelping of the fox. Those who deal in furs distinguish two animals of this kind, the one white, and the other ash-coloured: the last are the most valuable.

The Isatis lives upon rats, hares, and birds, which it catches with as much subtlety as the fox. It plunges in the water, and traverses the lakes, in search of water-fowls and their eggs. The only enemy it has in the desert and cold countries, which it inhabits, is the glutton.

THE GLUTTON.

Exclusive of the tail, which measures about a foot, the length of the Glutton is three feet. The top of the head, the whole of the back, the muzzle, and the feet, are of a blackish brown colour. The tail is of the colour of the body, and the sides are dusky. The body is thick, and its legs short. It is nearly of the size of a ram, but as thick again; its head is short, its eyes small, its teeth very strong; its fur is exceedingly beautiful, and much valued. It is common in Lapland, and all the neighbouring countries of the Northern Sea, as well in Europe and America as in Asia. It is called *Carcajou* in Canada, and the northernmost parts of America.

The legs of the Glutton are not formed for running its pace is very slow; but its cunning supplies this deficiency; it waits the arrival of its prey in ambush; and, in order to seize it with greater security, it climbs up a tree, carrying with it a quantity of a kind of moss to which the deer are partial. This it throws down to the deer, and if one of them stops, the Glutton darts down, and fastens itself so strongly with its claws and teeth, that all the efforts of the animal cannot remove it. The poor animal in vain flies with its utmost speed; in vain it rubs itself against trees and other objects; all is useless: fastened on its back or loins, the Glutton still persists in tormenting it, by digging into its flesh and sucking its blood, till the animal, fainting with loss of blood, falls; then the Glutton devours it by piecemeal, with the utmost avidity and obstinate cruelty. It is inconceivable, what a length of time together the Glutton will eat, and what a quantity of flesh it will devour at one single meal.

From this quality, the Glutton has obtained the name of the *Quadruped Vulture.* It is more insatiable, and commits greater depredations than the wolf; it would destroy every animal, if it had sufficient agility; but the only animal it is capable of taking on foot is the beaver, which it easily destroys: it even often attacks that animal in its hole, and devours both it and its young, if they do not get to the water in time; for then the beaver escapes its enemy by swimming, and the Glutton stops its pursuit to feed upon the fish. When it is deprived of any living food, it goes in search of carcasses, scratches open graves, and devours the flesh of dead bodies to the very bone.

Although this animal is subtle, and uses every art to conquer other animals, it seems to have not the least instinct for its own preservation. It suffers the human species to approach it without the least appearance o. fear. This indifference, which seems to show its imbecility, is occasioned, perhaps, by a different cause; it is certain that the Glutton is not a stupid animal, since it readily finds means to satisfy its perpetual and almost immediate appetite; it does not want for courage, since it attacks every animal indifferently that comes in its way, and does not fly at the sight of man, nor even show the least mark of spontaneous fear. When attacked, it resists stoutly, and is able to break a trap in pieces, or tear the stock from a gun. If, therefore, it is deficient in a proper care for its own safety, it does not arise from an indifference for it preservation, but only from its habit of security, as it is a native of almost every desert country, where it seldom meets with any of the human species.

As the isatis is not so strong, but much swifter than the Glutton, it serves as a purveyor to the latter, which follows it in its pursuit of animals, and often deprives it of its prey before it has devoured it, or, at least, partakes of it; for, the moment the Glutton approaches, the isatis, to avoid destruction itself, leaves what remains, for the Glutton to feed on. Both these animals burrow in the ground; but in every other habit they are different. The isatis often goes in flocks, while the Glutton moves alone, or sometimes with its female: they are often found together in their burrows. The fiercest dogs are fearful of attacking the Glutton, which defends itself with its teeth and feet, and often mortally wounds them.

The flesh of the Glutton, like that of every other voracious animal, is very bad food. It is only hunted after for its skin, which makes an exceedingly good and beautiful fur, not inferior to the sable and black fox. It is also said that, when properly chosen and well dressed, it has a more excellent gloss than any other skin, and even has the beauty of a rich damask. The Kamtschadales esteem it so highly, that they say the heavenly beings wear garments of no other fur. The women ornament their hair with its white paws.

THE STINKING POLECATS

ARE found in every part of South America. They may be divided into four species; the *Squash*, the *Conepate*, the *Skink*, and the *Zorille*.

The first of these animals is about sixteen inches long: its legs are short, its snout pointed, its ears small, its hair of a deep brown, and its claws black and sharp. It chiefly dwells in the hollow and clefts of rocks, where it brings forth its young. It preys upon small animals, birds, &c.; and when it can steal into a farm yard, it kills the poultry, but eats only their brains. When it is pursued or offended, it calls up all its diabolical scents to its defence, and sends forth such a horrid stench, that it is dangerous for men or dogs to approach it. Its urine is apparently infected with this nauseous vapour, which, however, we must observe, does not seem habitual to it.

Among the four kinds of *Stinkards* we have above indicated, the two last belong to the hottest countries of South America, and may possibly be no more than two varieties, and not two different species. The two first are varieties of New Spain, Louisiana, Carolina, and other temperate climates, and seem to be two distinct and different species from the others; but particularly the Squash, which has a particular character, of having only four claws on the fore feet, whereas all the rest have five; but, in every other respect, these animals have nearly the same figure, the same instinct, the same offensive scent, and only differ, as I may say, by the colour and length of the hair. The Squash, as has been observed, is of a pretty uniform brown colour, and its tail is not tufted like the rest. The Conepate has five white stripes on a black ground, running longitudinally from the head to the tail. The Skink is white on the back, and black on the side, but quite black on the head, excepting a white streak, which runs from the nape of the neck to the forehead. Its tail is tufted, and clothed with very long white hairs, mixed with some of a black colour.

The Zorille, which is also called Mauripita, is still smaller, and has a most beautiful tail, furnished with as great abundance of hair as the Skink, from which it differs by the disposition of the spots on its coat, the white streaks running longitudinally from the head to the middle of the back, on a black ground; besides which, there are other kinds of streaks, which pass transversely over the loins, the crupper, and the insertion of the tail, one half of which is black and the other white; whereas in the Skink they are all of the same colour.

Kalm, speaking of this animal, says, "One of them came near the farm where I lived. It was in winter time, and during the night, and the dogs that were upon the watch pursued it for some time, until it discharged its urine against them. Although I was in my bed a good way off, I thought I should have been suffocated, and the cows and oxen themselves, by their lowings, showed how much they were affected by the stench. About the end of the same year, another of those ani mals crept into our cellar, but did not exhale the smallest scent, because it was not disturbed. A foolish woman, however, who perceived it in the night by the shining of its eyes, killed it, and at that moment its stench began to spread. The whole cellar was filled with it to such a degree, that the woman kept her bed for several days after, and all the meat, bread, and other provisions, that were kept there, were so infected, that they were obliged to be thrown out of doors."

All these animals are nearly of the same form and size as the European Polecat; they resemble it also by its natural habits; and the physical results of their generation are the same.

THE PEKAN AND THE VISON.

The fur merchants of Canada, have long been acquainted with the name of Pekan, without any knowledge of the animal to which it belongs. We are also ignorant of the origin of the *Vison* as well as of the *Pekan*, and it is only said they belong to two different animals of North America, and principally of Canada.

The *Vison* lives in burrows, by the water side. Its feet are demi-palmated; its fur is of a more or less deep brown, with a fawn coloured tinge; its tail is of a blackish brown. On the point of the lower jaw is a white spot.

The *Pekan* lives in the same countries, and has the same habits, as the *Vison*. The head, neck, shoulders, and upper part of the back, are of a mixed gray and brown. The nose, the loins, the tail, and the limbs are of a blackish brown. There is very often a spot on the throat.

THE SABLE.

Almost every naturalist has spoken of this animal without knowing any thing more of it than its skin. Mr. Gmelin is the first who has given its figure and description: he saw two living ones at the governor of Tobolski's. "The Sable (says he) resembles the martin in its shape and habit of body, and the weasel in the number of its teeth: it has large whiskers about the mouth, its feet are broad, and armed with five claws, like the rest of its kind. These characters were common to these two Sables; but one of them was a dark brown, excepting the ears and the throat, where the hair was rather yellow; the other, which was smaller, was more of a yellowish cast, its ears and throat being also much paler. These are the colours they both have in winter, and which they are seen to change in the spring; the former becoming of a yellow brown, the other of a pale yellow." He says, also, that at night they were extremely restless and active; but that, in the day, and particularly after eating, they would sleep so soundly for half an hour or an hour at a time, that not even pricking them would awaken them. When they saw a cat, they rose on their hind feet, preparatory to the combat.

These animals inhabit the banks of rivers in shady places, and in the thickest woods: they leap with great ease from tree to tree, and are said to be afraid of the sun, which tarnishes the lustre of their robes in a very short time. They are also improperly said, by some, to hide themselves, and remain torpid during the winter, when it is the chief time they are hunted, and in which only they are in season, as their skins are much finer and better at that time than in summer: they live on rats, fish, and wild fruit: they have the disagreeable odour of their kind, which is strongest during the time their heat is on them: they are mostly found in Siberia, and but very few in Russia; and there are still fewer in Lapland and other countries. The blackest skins are the most esteemed. The difference of this skin from others consists in the quality of the fur, which has no grain, and rubbed any way is equally smooth and unresisting; whereas, the furs of other animals, rubbed against the grain, give a sensation of roughness from their resistance. The skin of the Sable is, accordingly, more valuable than that of any other animal of an equal size.

The hunting of the Sable falls to the lot of condemned criminals, who are sent from Russia into these wild and extensive forests, which, for a great part of the year, are covered with snow; these unfortunate wretches remain there many years, and are obliged to furnish a certain number of skins every year; they only kill this animal by a single ball, in order to damage it as little as possible; and sometimes, instead of fire-arms, they make use of the cross-bow and very small pointed arrows. As the success of this hunting trade supposes address and great assiduity, the officers are permitted to encourage the hunters, by allowing them to share among themselves the surplus of those skins which they procure; and this, in the process of a few years, amounts to a very considerable sum. As, however, Siberia has become more populous, the Sables have retired further to the north and east, among the deserts and mountains.

THE LEMMING RAT, OR LAPLAND MARMOT,

Is of the shape of a mouse, but has a shorter tail: its body is about the length of five inches, covered with fine hair of various colours. Those of Norway are of the size of a water rat; but those of Lapland are scarcely as large as mice. The former are variegated with black and tawny in the upper parts; the sides of the head and the under parts are white. The legs are grayish, and the under parts of the body of a dull white. In some there are many red hairs about the mouth resembling whiskers, six of which are longer and redder than the rest. The mouth is but small, and the upper lip is divided like the squirrel's. The remains of the food in the throat of this animal incline us to imagine it ruminates. The head is large, short, and thick; the neck short; and the body thick. The eyes are small and black; the ears round, and inclining towards the neck; the legs before are short, and those behind longer, which gives it a greater degree of swiftness; the feet are clothed with hair, and armed with five very sharp and crooked claws; the middle claw is very long, and the fifth is like a little finger, or the spur of a cock, sometimes placed very high up the leg. This animal, therefore, whose legs are very short, runs quite swift. It generally inhabits the mountains of Norway and Lapland, but descends in such great numbers, in some years, and in some seasons, that the inhabitants look on their arrival as a terrible scourge, from which there is no possibility of deliverance They move, for the most part, in a square, marching forward by night, and lying still by day Thus, like an animated torrent, they are often seen more than a mile broad covering the ground, and that so thick, that the hindmost touches its leader. It is in vain that the inhabitants resist, or attempt to stop their progress; they still keep moving forward; and though thousands are destroyed, myriads are seen to succeed and make their destruction impracticable: they generally move in lines, which are about three feet from each other, and exactly parallel: their march is always directed from the north-west to the south-west, and regularly conducted from the beginning. Wherever their motions are turned, nothing can stop them; they go directly forward, impelled by some strange power; and from the time they at first set out, they never think of retreating. If a lake or a river happens to interrupt their progress, they all together take the water and swim over it; a fire, a deep well, or a torrent, does not turn them out of their straight-lined direction; they boldly plunge into the flames, or leap down the well, and are sometimes seen climbing up on the other side. If they are interrupted by a boat across the river while they are swimming, they never attempt to swim round it, but mount directly up its sides; and the boatmen, who know how vain resistance would be, calmly suffer the living torrent to pass over, which it does without farther damage. If they meet with a stack of hay or corn which interrupts their passage, instead of going over it, they gnaw their way through; if they are stopped by a house in their course, if they cannot get through it, they continue there till they die. It is happy, however, that they eat nothing that is prepared for human subsistence; they never enter a house to destroy the provisions, but are contented with eating every root and vegetable that they meet. If they happen to pass through a meadow, they destroy it in a very short time, and give it an appearance of being burnt up and strewed with ashes. If they are interrupted in their course, and a man should imprudently venture to attack one of them, the little animal is no way intimidated by the disparity of strength, but furiously flies up at its opponent, and barking somewhat like a puppy, wherever it fastens it does not easily quit its hold: if, at last, the leader is found out of its line, which it defends as long as it can, and be separated from the rest of its kind, it sets up a plaintive cry, different from that of anger, and, as some say, gives itself a voluntary death, by hanging itself on the fork of a tree.

An enemy so numerous and destructive would quickly render the countries where they appear utterly uninhabitable, did it not fortunately happen that the same rapacity that animates them to destroy the labours of mankind, at last impels them to destroy each other. After committing incredible devastation, they are at last seen to separate into two armies, opposed with deadly hatred along the coasts of the larger lakes and rivers. The Laplanders, who observe them thus drawn up to fight, instead of considering their mutual animosity as a happy riddance of a most dreadful pest, form ominous prognostics from the manner of their engagements: they consider their combats as a presage of war, and expect an invasion from the Russians or Swedes, as the side next those kingdoms happens to conquer. The two divisions, however, continue their engagements and animosity until one part overcomes the other: from that time they utterly disappear, nor is it well known what becomes of either the conquerors or the conquered. Some suppose, that they rush headlong into the sea; others, that they kill themselves, as some are found hanging on the forked branches of a tree; and others, that they are destroyed by the young spring herbage. But the most probable opinion is, that having devoured the vegetable productions of the country, and having nothing more to subsist on, they then fall to devouring each other, and having habituated themselves to that kind of food, continue it. However this be, they are often found dead by thousands, and their carcasses have been known to infect the air for several miles round, so as to produce very malignant disorders: they seem also to infect the plants they have gnawed, for the cattle often die that afterwards feed in the places where they passed. The inhabitants have an opinion, as they do not know whence such numbers proceed, that they fall with the rain.

Five or six young ones are produced at each litter, and the female brings forth several times in the course of a year. They sometimes litter while emigrating.

and they have been seen carrying some of their offspring in their mouths, and others on their backs.

As for the rest, the male is generally larger and more beautifully spotted than the female: they go in droves into the water: but no sooner does a storm of wind arise, than they are all drowned. The flesh of the Lemmings is horrid food, and their skin, although covered with a very beautiful fur, is of too little consistence to be serviceable.

THE CANADIAN OTTER,

WHICH is much larger than the common Otter must be a native of the north of Europe, as well as of Canada. It appears to be larger and blacker than the common Otter; but is rather a variety than a distinct species.

THE SEAL.

THIS animal has its head round, like that of the human species; its snout is broad like the otter's; the eyes large and elevated; little or no external signs of ears, only two auditory passages in the sides of the head; it has whiskers about its mouth, and its teeth somewhat resemble those of the wolf; the tongue is forked at the point; the body, hands, and feet, covered with a short and bristly hair; it has no legs, but two feet, or membranes, like hands, with five toes, terminated by as many claws: these membranes, which have the appearance of hands, are only larger, and turned backwards, as if designed to unite with its very short tail, which they accompany on both sides. The body is thickest where the neck is joined to it, whence the animal tapers down to the tail like a fish. This amphibious creature, though of a very different nature from that of our domestic animals, yet seems susceptible of a kind of education: it is fed by putting it often in water: it is taught to salute persons with its head and its voice; it is accustomed to obey the call of its keeper, and gives many other signs of intelligence and docility.

The sensations of the Seal are as perfect, and its sagacity as ready, as those of any other quadruped:

both the one and the other are strongly marked by its docility, its social qualities, its strong instinct for its female, its great attention towards its young, and by its voice, which is more expressive and more modulated than in other animals: its body is likewise firm and large: it is also strong, and armed with very sharp teeth and claws, and has many particular and singular advantages over any other animals we can compare with it; it endures both heat and cold, and feeds indifferently on grass, flesh, or fish; it can equally live on ice, land, or in the water. This animal and the walrus are the only quadrupeds which deserve the name of *amphibious*, or which have the *foramen ovale* open, consequently they are the only animals of that class which can exist without respiration, and to which the watery element is as agreeable as that of the air.

But these advantages, which are very great, are counterbalanced by imperfections still greater: they may be said to be deprived of the use of their fore legs, or membranes; they are almost entirely shut up within its body, while nothing appears but the extremity of them, which are furnished with five toes, scarcely moveable, being united together by a very strong membrane, so that they might more properly be called fins than feet, as they are more adapted for the purpose of swimming than walking, the hind feet, indeed, being turned backwards, are entirely useless upon land; so that when the animal is obliged to move, it drags itself forward like a reptile, and with an effort more painful; for it cannot twist itself about like a serpent, but lies like a lump on the earth, and by grasping whatever it finds in its reach, drags itself up the steepest shores, rocks, and shoals of ice: by this method it moves with such a degree of swiftness, that a man cannot overtake it; it makes its way towards the sea, and often, though wounded, escapes the pursuit of the hunter.

Seals are social animals, and generally found in great numbers in the places they frequent: their natural climate is the northern, but they are also met in the temperate and even hot countries; for they are seen on the shores of almost all the seas in the universe. The species alone seems to vary, and, according to the difference of climates, changes its colour and even its shape

The females of these animals bring forth in winter, and rear their young upon some sand-bank, rock, or small island, at some distance from the continent. When they suckle their young, they sit upon their hinder legs, and they continue with their dam for twelve or fifteen days; after which she brings them down to the water, accustoms them to swim, and get their food by their own industry. As each litter never exceeds above three or four, so the animal's cares are not much divided, and the education of her little ones is soon completed. The young particularly distinguish their mother's voice among the numerous bleatings of the old ones, and are perfectly obedient to her call. We are unacquainted with the time of the female's gestation; but, if we judge from the time of their growth, the length of their lives, and the size of the animals, it will appear to be many months: the time also that intervenes, from their birth till they attain their full growth, being many years, the length of their lives must also be very long. I am of opinion that these animals live upwards of a hundred years; for we know that cetaceous animals in general live much longer than quadrupeds; and as the Seal fills up the chasm between the one and the other, it must participate of the nature of the first, and consequently live much longer than the latter.

The voice of the Seal may be compared to the barking of an angry dog. When young, they have a shrill note, somewhat like the mewing of a cat: those that are taken early from their dams mew continually, and very often die sooner than take the food that is offered them. These animals in general are of a courageous nature. It is remarked, that instead of being terrified at thunder and lightning, they are rather delighted, generally come on shore in tempests and storms, and even quit their icy abodes to avoid the shock of the tempestuous waves: at such times, they sport in great numbers along the shore; the tremendous conflict seems to divert them, and the heavy rains that fall appear to enliven them: they have naturally a disagreeable scent, and when there are great numbers together, it is smelt at a great distance. It often happens, that when pursued they drop their excrements, which are of a yellow colour, and of a very abominable scent

As they have a prodigious quantity of blood, and are also greatly overloaded with fat, they are consequently of a very dull and heavy nature; they usually sleep soundly, and are fond of taking their repose on flakes of ice, or on the sides of rocks, at which time the hunters approach very near without disturbing them, and this is the usual method of taking them: they are very seldom killed with fire arms; for, as they do not immediately die, even if they are shot in the head, they plunge into the sea, and are entirely lost to the hunter; the general method therefore is, to surprise them when asleep, and knock them on the head. " They are not easily killed, and are a long time dying (says a modern traveller), for although they are mortally wounded, and their blood nearly exhausted, and nearly stripped of their skins, yet they still continue alive; indeed, it is a disagreeable sight to see these animals wounded and skinned, wallowing and rolling about in their blood in the greatest agonies. These remarks were made on the animals we killed, which were about eight feet long, for, after they were skinned, and even deprived of a great part of their fat, yet they attempted to bite their butchers, notwithstanding they had given them many powerful blows over the head and nose. One of them even seized a lance which was presented to it with as much eagerness as if it had not been wounded; after which we pierced it through the heart and liver, whence as much blood flowed as is contained in a young ox."

THE COMMON SEAL.

These animals differ considerable in size, being found from four to nine feet long; they also vary in their colours; some being black, others white, some spotted, and many yellow. Their chief food consists of fish, which they are remarkably expert in pursuing and catching. In those places where herrings are seen in shoals, the Seals destroy them by thousands; and when these retire they are obliged to hunt after fish that are stronger, and more capable of evading pursuit. They are taken for the sake of their skins and the oil their fat yields. The Seal is capable of being tamed, and is said to be fond of music. The Icelanders believe them to be the offspring of Pharaoh and his host, who were converted into Seals on their being overwhelmed in the Red Sea. Were the race of this creature to cease to exist, the Greenlander would be rendered almost unable to inhabit his rigid clime, as it is principally from them that he derives the necessaries of life. There is scarcely a part of them which is not of the highest utility to him.

THE URSINE SEAL.

The males of this species are, in general, about eight feet long, but the females are much smaller. Their bodies are very thick, and the colour of the hair is commonly black, but that of the old ones is tipped with gray. The females are of an ash-coloured hue. The nose projects like that of a pug dog, and the eyes are large and prominent. Their voice varies on different occasions; thus, when sporting on their native rocks, they low like a cow; when engaged in battle they growl hideously; after a defeat or receiving a wound, they mew like a cat; and the note of triumph after a victory somewhat resembles the chirping of a cricket. These animals are chiefly found on the islands in the vicinty of Kamtschatka, from June to September; after which they remove, some to the Asiatic, and some to the American coast. On Behrings Island they are so numerous as almost to cover the whole shore; but it is a singular fact that they only frequent that part of it which lies towards Kamtschatka.

Ursine Seals live in families, each male being surrounded by from eight to fifty females, whom he watches with the most vigilant jealousy, and treats in the most tyrannical manner. They are of an irritable disposition, and have frequent battles. So tenacious are they of life that they will live a fortnight after receiving wounds which would be speedily mortal to other animals.

THE BOTTLE-NOSED SEAL.

This variety of the Seal is usually found in the seas around New Zealand, the island of Juan Fernandez, and the Falkland islands. The male of this species measures from fifteen to twenty feet in length, and differs from the female in having a large snout, which projects five or six inches beyond the extremity of the upper jaw, and which, when irritated, it inflates, so as to give to it the appearance of an arched or hooked nose. The quantity of blubber contained between the skin and the flesh is so great, it being at least a foot in depth in the largest, that the animal, when in motion, looks like an immense skin filled with oil. This quantity of fat probably contributes to render the Bottle-nosed Seal of so lethargic a disposition, that it is not easily to be compelled to move, and, consequently, is easily killed. It divides its time almost equally between the land and sea, and lives in herds, each of which seems to be under the direction of a large male, which seamen term the Bashaw, from the circumstance of his driving away females from the other males, and appropriating them to himself. At a distance from each herd, some of the males are placed as sentinels, and by them the alarm is loudly given in case of danger.

THE SEA LION, OR LEONINE SEAL.

To the species of seals, as above described, we may with great propriety, add another animal, described in Anson's Voyages by the name of the *Sea Lion.* They are found in great numbers on the coasts of the South Sea. The Sea Lion resembles our sea calf, which is very common in the same latitude; but they are much larger than any of the former, being from eleven to eighteen feet long, and from eight to eleven in circumference. It is so fat, that when the skin is taken off, the blubber is about a foot thick all round the body. About ninety gallons of oil is drawn from one of these animals; they are at the same time very full of blood, and when deeply wounded in many parts of the body, the blood spouts out with amazing power: the throat of one of these animals being cut, it afforded two barrels of blood, besides what then remained in its body. Its skin is covered with a short hair of a brownish colour, but blackish on the tail and feet: their toes are united by a membrane which does not reach to their extremity; each of the toes is known by a claw. The Sea Lion differs from the seal, not only in its size and bulk, but also in some other characters; the male has a kind of thick comb or trunk hanging from the end of the upper jaw, about five or six inches long. This character is not seen in the female. The strongest males collect together a flock of females, and hinder the others from approaching them. These animals are truly amphibious; they remain all the summer in the sea, and go on shore in winter, at which season the females bring forth their young, but never above one or two at a litter, which they suckle, like the seal.

The Sea Lions, while they are on shore, feed on the grass by the side of the sea: they are of a very heavy and drowsy nature, and delight to sleep in the mire; but they are very wary, and at those times commonly fix some as sentinels near the place where they sleep; and it is said, that these sentinels are very careful to awake them when any danger is near. Their voices are very shrill, and of various tones; sometimes grunting like hogs, and sometimes neighing like horses. The males often fight with each other, when they wound one another desperately with their teeth. The flesh of these animals is not disagreeable to eat, particularly the tongue, which is as good as that of the ox. They are very easily killed, as they cannot defend themselves, nor fly from their enemies: they are so exceedingly heavy, that they move with great difficulty, and turn themselves about with still greater. Those that hunt them have only to guard against their teeth, which are very strong, and which they make use of with powerful effect on those who approach within their reach.

By comparing other observations and accounts, the Sea Lion of South America appears to be nearly the same as that found on the northern coast of the same continent. The great seal of the Canadian Sea, spoken of by Davis, by the name of the sea wolf, and which he distinguishes from the common sea calf, might possibly be the same as the Sea Lion we are speaking of. Their young, says this author, are larger and longer than our largest hog.

THE WALRUS, MORSE, OR SEA COW.

The name of Sea Cow, or Sea Horse, by which the Walrus is most generally known, has been very wrongly applied, since the animal which it denotes has not the least resemblance to the land animals of that name: the denomination of sea elephant, which others have given it, is much better imagined, as it is founded on a singular and very apparent character. The Walrus, like the elephant, has two large ivory tusks, weighing from ten to thirty pounds each, which shoot from the upper jaw; its head also is formed, or rather deformed, like that of the elephant, and would entirely resemble it in that part if it had a trunk; but the Walrus is deprived of that instrument, which serves the elephant in the place of an arm and hand, and has real arms to make use of. These members, like those of the seal, are shut up within the skin, so that nothing appears outwardly but its hands and feet: its body is long and tapering, thickest towards the neck: the whole body is clothed with a short hair: the toes, and the hands, or feet, are covered with a membrane, and terminated by short and sharp-pointed claws. On each side of the mouth are large bristles in the form of whiskers: its tongue is hollowed, the concha of the ears are wanting, &c.; so that, excepting the two great tusks, and the cutting teeth, which it is deficient in above and below, the Walrus in every other particular perfectly resembles the seal: it is only much larger and stronger, being commonly from twelve to sixteen feet in length, and eight or nine in circumference, and sometimes reaching eighteen feet in length, with a proportionable girth; whereas the largest seals are no more than seven or eight feet. The Walruses also are generally seen to frequent the same places as the seals are known to reside in, and are almost always found together. They have the same habitudes in every respect, excepting that there are fewer varieties of the Morse than the seal; they likewise are more attached to one particular climate, and are rarely found except in the northern seas.

"There was formerly," says Zordrager, "great plenty of Morses and seals in the bays of Horisont and Klock, but at present there are very few. Both these animals quit the water in the summer, and resort to the neighbouring plains, where there are flocks of them from eighty to two hundred, particularly Morses, which will remain there several days together, till hunger obliges them to return to the sea. This animal externally resembles the seal, but it is stronger and much larger: like that, it has five toes to each paw, but its claws are shorter, and its head thicker and rounder; its skin is thick, wrinkled, and covered with very short hair of different colours; its upper jaw is armed with two teeth about half an ell or an ell in length; these tusks, which are hollow at the root, become larger as the animal grows older. Some of them are found to have but one, the other being torn out in fighting with each other, or perhaps fallen out through age. This ivory generally brings a greater price than that of the elephant, as it is of a more compact and harder substance. The mouth of this animal is like that of the ox, and furnished with hairs which are hollow, pointed, and about the thickness of a straw. Above the mouth are two nostrils, through which the animal spouts the water like a whale. There are a great number of Morses towards Spitzbergen, and the profit that is derived from their teeth and fat fully repays the trouble, for the oil is almost as much valued as that produced from the whale. When the hunter is near one of these animals in the water, or on the ice, he darts a very strong harpoon at it, which though made expressly for the purpose, often slips over its hard and thick skin; but if it has penetrated into it, they haul the animal towards the boat, and kill it with a sharp and strong lance. The Morse is generally heavier than the ox, and as difficult to pursue as the whale, the skin of which is more easily pierced. For this reason, they always endeavour to wound it in the most tender part, and aim at its eyes: the animal, obliged by this motion to turn its head, exposes its breast to the hunter, who immediately strikes it very forcibly in that part, and draws the lance out again as quick as possible, for fear it should seize the lance with its teeth, and wound those that attack it. Formerly, before these animals were so greatly persecuted, they advanced so far on shore, that when it was high water, they were at a great distance from the sea; and at low water, being at a still greater, the hunters easily approached them and killed great numbers. The hunters, in order to cut off their retreat to the sea, and after they had killed several, made a kind of barrier of their dead bodies, and in this manner often killed three or four hundred in a season. The prodigious quantity of bones spread over the shores, sufficiently proves how numerous these animals were in former times. When they are wounded, they become extremely furious, often biting the lances in pieces with their teeth, or tearing them out of the hands of their enemies: and when at last they are strongly engaged, they put their head between their paws, or fins, and in this manner roll into the sea. When there is a great number together, they are so bold as to attack the boats that pursue them, bite them with their teeth, and exert all their strength to overturn them."

Captain Cook saw a herd of them floating on an ice island off the northern coast of the American continent. "They lie (says he) in herds of many hundreds upon the ice, huddling over one another like swine; and roar or bray so loud, that in the night, or in foggy weather, they gave us notice of the vicinity of the ice before we could see it. We never found the whole herd asleep, some being always on the watch. These, at the approach of the boat, would wake those next to them; and the alarm being thus gradually communicated, the whole herd would be awaked. But they were seldom in a hurry to get away, till after they had been once fired at. They then would tumble over one another into the sea, in the utmost confusion. And if we did not, on the first discharge, kill those we fired at, we generally lost them, though mortally wounded. Vast numbers of these animals would follow and come close up to the boats; but the flash of a musket in the pan, or even the pointing of a musket at them, would send them down in an instant. The female Walrus will defend her offspring to the very last, and at the expense of her own life, whether in the water or upon the ice. Nor will the young one quit the dam, though she be dead; so that, if one be killed, the other is a certain prey."

We find the Walrus can live, at least for some time, in a temperate climate. We do not know how long it goes with young but if we judge by the time of its growth and size, we must suppose it to be upwards of nine months. It cannot continue in the water for a long time together, and is obliged to go on shore to suckle its young, and for other occasions. When they meet with a steep shore, or pieces of ice to climb up, they make use of their tusks to hold by, and their feet to drag along the heavy mass of their body. They are said to feed upon the shell fish which are at the bottom of the sea, and to grub them up with their strong tusks. Others say, that they live on the broad leaves of a certain vegetable which grows in the sea, and that they eat neither flesh nor fish But I imagine all these opinions have but a weak foundation; and there is reason to think, that the Walrus, like the seal, lives on prey, especially herrings and other fish; for it does not eat at all when upon land, and it is chiefly hunger which obliges it to return to the sea.

The fat of the Walrus furnishes from one to two barrels of oil; and the skin is capable of being manufactured into a strong and elastic leather.

THE MANATI.

This animal may be indiscriminately called the last of beasts or first of fishes. It cannot be called a quadruped; nor can it entirely be termed a fish: it partakes of the nature of a fish by its two feet or hands; but the hind legs, which are almost wholly concealed in the bodies of the seal and morse, are entirely wanting in the Manati: instead of two short feet and a small narrow tail, which is placed in a horizontal direction in the morse, the Manati has only a thick tail, spread out broad like a fan. Oviedo seems to be the first author who has given any sort of history or description of the Manati; he says, "it is a very clumsy and misshapen animal, the head of which is thicker than that of an ox, the eyes small, and the two feet or hands are placed near the head, for the purpose of swimming. It has no scales, but is covered with a skin, or rather a thick hide, with a few hairs or bristles: it is a peaceable animal, and feeds upon the herbage by the river sides, without entirely leaving the water, swimming on the surface of it to seek its food. The hunters practise the following method to take the Manati; they row themselves in a boat or raft as near the animal as possible, and dart a very strong lance into it, to the end of which a very long cord is fastened; the Ma nati feeling itself wounded, instantly swims away or plunges to the bottom: but the cord which holds the lance has a cork or piece of wood fastened to the end of it, to serve as a buoy; when the animal begins to grow faint and weak through the loss of blood, he swims to shore; the cord is then wound up, and the animal drawn within arm's length of the boat, where they despatch it in the water by strokes of the oar or lance. It is so very heavy, as to be a sufficient load for two oxen to draw; its flesh is excellent eating, which is eaten rather as beef than as fish. Some of these animals measure more than fifteen feet in length by six feet in breadth; the body becomes narrower towards the tail, and then spreads gradually broader towards the end. As the Spaniards, adds Oviedo, give the appellation of hands to the feet of quadrupeds, and as this animal has only fore feet, they have given it the name of *Manati*, i. e. an animal with hands. The female has breasts placed forward like those of a woman, and she generally brings forth two young ones at a time, which she suckles. The flesh and fat of this animal (says M. de Condamine) have a great resemblance to veal. It is not, properly speaking, amphibious, since it never entirely leaves the water, having only two flat fins, close to the head, about sixteen inches long, and which serve the animal instead of arms and hands. It only raises its head out of the water to feed on the herbage by the seaside. The eyes of this animal have no proportion to the size of its body; the orifice of its ears is still less, and only seems like a hole made by a pin. The Manati is not peculiar to the Amazonian river; for it is not less common in the Oroonoko: it is found also, though less frequently, in the Oyapoc, and many other rivers in the environs of Cayenne, and the coast of Guiana, and probably in other parts."

The Manati species, however, is not confined to the seas and rivers of the New World, but is found also in those of Africa.

As the description given by Buffon of this animal is too vague to be satisfactory, it may be proper to enlarge somewhat on the different species.

THE WHALE-TAILED MORSE.

THIS variety of the Morse tribe, which is also called the Manati, chiefly inhabits that part of the North Pacific which lies between Kamtschatka and America. It lives in families, which unite and form immense droves. All the individuals are exceedingly attached to each other, particularly the males to their females; nothing can terrify or compel the latter to abandon the former. The Manati is sometimes twenty-eight feet long, and weighs as much as eight thousand pounds. It has a small head, double lips, and the mouth is filled with white tubulous bristles, near the junction of the jaws, which prevent the food from escaping out of the mouth with the water. The blubber and the skin are the parts which render this creature an object of pursuit to mankind.

THE ROUND-TAILED MANATI.

THIS animal frequents most of the great African rivers, from Senegal to the Cape of Good Hope, and also many of the rivers on the eastern shore of South America. It is often seen in the Amazon nearly a thousand leagues from its mouth. It prefers shallow waters near low land, and is a frolicsome creature, frequently leaping into the air to great heights. The natives of America are said frequently to tame it, and we are told that it delights in music. The female, when struck by the harpoon, seems insensible to her own sufferings, and only anxious to protect her young one, by taking it under her fins or feet. The Round-tailed Manati is about six feet in length, and three or four in circumference. Its flesh is a white, well tasted, and salubrious food. When the thicker parts of the skin are cut into slices and dried, they become exceedingly tough, and form good whips. Of the thinner parts, which have more pliability, the Indians make thongs to fasten together the sides of their canoes.

THE SEA-APE MANATI.

THIS animal was seen, by Mr. Steller, off the coast of America, and was called by him the Sea-Ape. Pen nant places it among the Manati tribe; but, as it has a head resembling in some measure that of a dog, with sharp upright ears, Mr. Bingly is disposed to class it with the seals. The name of Sea-Ape was given to it in consequence of the frolicsome tricks which it played. It swam round and admired the ship, stood erect for a considerable time with one-third of its body out of the water, darted backward and forward repeatedly, under the ship, and brought up in its mouth a sea plant, like the bottle gourd, which it tossed up, caught, and played innumerable antics with.

CHAPTER XXI.

Of Monkeys—The Oran-otang—The Pigmy—The Gibbon, or Long-armed Ape—The Magot—The Baboon—The Maimon—The Mandrill—The Pig-tailed Baboon—The Pig-faced Baboon—The Bonnetted Monkey—the Dog-faced Baboon—The Ursine Baboon—The Wanderoo and the Loando—The Macaque and Egret—The Patas—The Malbrouck—The Mangabey—The Mona—The Callitrix—The Mustache—The Talapoin—The Douc—American Monkeys—The Warine and Alouato—The Coati—The Capuchin Monkey—The Sai, or Weeper—The Siamira, or Orange Monkey—The Saki—The Tamarin—The Wistiti—The Marikina—the Pinch—The Mico.

MONKEYS.

The Monkey tribe is very numerous, and is usually classed by naturalists in three divisions. Those which have no tails are termed *Apes*, and those which have short tails are denominated *Baboons;* but by far the most numerous division consists of those which have long tails, and which are known by the general name of *Monkeys.*

THE ORAN-OTANG, OR THE PONGO AND THE JOCKO.

Oran-otang is the name this animal bears in the East Indies; *Pongo*, its denomination at Loando, province of Congo; and Kukurlacks in some parts of the East Indies. We shall present the Oran-otang and the Jocko together, because they are, possibly, but one and the same species. We have seen the small Oran-otang, or the Jocko, alive, and we have preserved its skin, but we can only speak of the Pongo, or great Oran-otang, from the accounts travellers have given us of it. Battel assures us, "that, excepting his size, the Pongo is exactly like that of a man in all his proportions: he is as tall (he says) as a giant: his face is like that of a man, the eyes deep sunk in the head, the hair on each side extremely long, the visage naked and without hair, as are also the ears and the hands; the body is lightly covered and scarcely differing from that of a man, except that there are no calves to the legs. Still, however, the animal is seen to walk on his hinder legs: he sleeps under trees, and builds himself a hut, which serves to protect him against the sun, and the rains of the tropical climates, of which he is a native; he lives only upon fruits, and is not carnivorous: he cannot speak, although furnished with greater instinct than any other animal of the brute creation. When the Negroes make a fire in the woods, this animal comes near and warms himself by the blaze: he has not, however, skill enough to keep the flame alive by feeding it with fuel. They go together in companies, and if they happen to meet with one of the human species, remote from succour, they show him no mercy. They even attack the elephant, which they beat with their clubs, and oblige to leave that part of the forest which they claim as their own. It is impossible to take any of these creatures alive, they are so strong. None of this kind, therefore, are taken, except when very young, and then but rarely, when the female happens to leave them behind; for, in general, they cling to the breast, and adhere both with legs and arms. There are two kinds of this animal, both very much resembling the human race, the Pongo, which is taller and thicker than a man; and the Jocko, whose size is much smaller," &c. "The Apes of Guinea (says Bosman), which are called *Smitten* by the Flemings, are of a brown colour, and grow to a very large size. I have seen some above five feet tall: these Apes are of a very disagreeable appearance, as well as those of another kind, which resemble them in every particular, excepting in size, which is a fourth part less than that of the former: they are very easily taught to do almost whatever their masters please." Schouten says, "That the animals which the Indians call Oran-otangs, are almost all of the same height and shape as mankind, but that their back and loins are covered with hair, of which, however, there is a deficiency in the fore part of the body; that the females have two breasts; that the face is rough, the nose flat, and the ears like those of a man; that they are robust, active, bold, and defend themselves even against armed men; that they are passionately fond of women, and that there is no safety for them in passing through the woods they inhabit, as these animals immediately attack and injure them." To these testimonies we may add that of M. de la Bresse, mentioned in his Voyage to Angola. This traveller assures us, "that the Oran-otangs, which he calls *Quimpeazes*, often attempt to surprise the female negroes, which they keep with them for the pleasure of their company, feeding them very plentifully all the time. I knew (says he) a woman of Loando that had lived among these animals for three years. They grow from six to seven feet high, and are of unequalled strength. They build sheds, and make use of clubs for their defence: their faces are broad, their noses flat, their ears without a tip, their skins are fairer than that of a Mulatto, but they are covered on many parts of their body with long and tawny coloured hair: their belly is extremely large, their heels flat, and yet rising behind about half an inch: they sometimes walk upright, and sometimes upon all fours when they are fantastically disposed. We purchased two of these animals, one about fourteen months old, which was a male, and a female about twelve months."

The Oran-otang which I saw, walked always upright, even when it carried heavy burdens. Its air was melancholy, its deportment grave, its nature more gentle and very different from that of other apes. Unlike the baboon, or the monkey, whose motions are violent, and appetites capricious, who are fond of mischief, and only obedient through fear, a look was sufficient to keep it in awe. I have seen it give its hand to show the company to the door, that came to see it, and it would walk about gravely with them, as if one of the society. I have seen it sit at table, unfold its napkin, wipe its lips, make use of the spoon and the fork to carry the victuals to its mouth, pour out its drink into a glass, touch glasses when invited, take a cup and saucer and lay them on the table, put in sugar, pour out its tea, leave it to cool before drinking, and all this without any other instigation than the signs or the command of its master, and often of its own accord. It was gentle and inoffensive: it even approached strangers with respect, and came rather to receive caresses than to offer injuries: it ate almost of every thing that was offered to it, but it preferred dry and ripe fruits to all other aliments. It would drink wine, bu in small quantities, and willingly left it for milk, y other sweet liquor. Mr. L. Brosse, who bought two young ones that were but a year old, from a negro, relates that, "even at that age, they sat at table, ate of every thing without distinction, made use of their knife, spoon, and fork, both to eat their meat and help themselves; they drank wine and other liquors. We carried them on shipboard, and when they were at table, they made signs to the cabin-boys expressive of their wants; and whenever they neglected attending upon them as they desired, they instantly flew into a passion, seized them by the arm, bit them, and kept them down. The male was seasick, and required attendance like a human creature: he was even twice bled in the right arm; and every time afterwards when he found himself indisposed, he showed his arm, as desirous of being relieved by bleeding."

Henry Grose relates, "that these animals are met with to the north of Coromandel; that Mr. Horne, governor of Bombay, had two of them sent him, a male and a female; they were scarcely two feet high, but their form was entirely like the human: they walked erect upon their two feet, and were of a pale colour, without any hairs on any other part than where mankind generally have them; their actions perfectly resembled the human, and their melancholy plainly evinced how strongly they felt the weight of their captivity: they made their bed very carefully in the cage in whic they were sent on board the ship

When any person looked at them, they hid those parts with their hands, which modesty forbids the sight of. The female (adds he) died on board, and the male showed all real signs of grief, and took the death of his companion so greatly to heart, that he refused his food, and did not survive her more than two days."

Francis Pyrard relates, "that in the province of Sierra Leona, in Africa, there are a kind of apes called *Barris*, which are strong and muscular, and so very industrious, that, if properly fed and instructed when young, they serve as very useful domestics: they usually walk upright, will pound at the mortar, fetch water from the river in a little pitcher, which they carry on their heads; but, if care be not taken to receive the pitcher at their return, they let it fall to the ground, and then, seeing it broken, they begin to lament and cry for the loss."

The Jocko is known by the name of the Chimpanzee. It is the Simia Troglodytes of Linnæus. From the Oran it differs only in colour and stature; the former being dark brown or blackish, and the latter not exceeding two feet and a half or three feet. It is a native of Angola, Sierra Leone, and some parts of Asia.

Mr. M'Leod gives the following description of an Oran-otang which was brought to England, from Borneo, in 1816, on board the Alceste, when the embass was returning from its fruitless mission to China:—

"The Oran-otang, also a native of Borneo (says he), is an animal remarkable not only from being extremely rare, but as possessing, in many respects, a strong resemblance to man. What is technically denominated the cranium is perfectly human in its appearance; the shape of the upper part of the head, the forehead, the eyes (which are dark and full), the eyelashes, and, indeed, every thing relating to the eyes and ears, differing in no respect from man. The hair of his head, however, is merely the same which covers his body generally The nose is very flat, the distance between it and the mouth considerable; the chin, and, in fact, the whole of the lower jaw, is very large, and his teeth, twenty-six in number, are strong. The lower part of his face is what may be termed an ugly or caricature likeness of the human countenance. The position of the scapulæ, or shoulderblades, the general form of the shoulders and breasts, as well as the figure of the arms, the elbow joint especially, and the hands, strongly continue the resemblance. The metacarpal, or that part of the hand immediately above the fingers, is somewhat elongated; and, by the thumb being thrown a little higher up, nature seems to have adapted the hand to his mode of life, and given him the power of grasping more effectually the branches of trees.

"He is corpulent about the abdomen, or, in common phrase, rather pot-bellied, looking like one of those figures of Bacchus often seen riding on casks: but whether this is his natural appearance when wild, or acquired since his introduction into new society, and by indulging in a high style of living, it is difficult to determine.

"His thighs and legs are short and bandy, the ankle and heel like the human; but the fore part of the foot is composed of toes, as long and as pliable as his fingers, with a thumb a little situated before the inner ankle; this conformation enabling him to hold equally fast with his feet as with his hands. When he stands erect, he is about three feet high, and he can walk when led like a child, but his natural locomotion, when on a plain surface, is supporting himself along, at every step, by placing the knuckles of his hands upon the ground. All the fingers, both of the hands and feet, have nails exactly like the human race, except the thumb of the foot, which is without any.

"His natural food would appear to be all kinds of fruits and nuts, but he eats biscuit, or any other sort of bread, and sometimes animal food. He will drink grog, or even spirits, if given to him; and has been known repeatedly to help himself in this way: he was also taught to sip his tea or coffee, and, since his arrival in England, has discovered a taste for a pot of porter. His usual conduct is not mischievous and chattering, like that of monkeys in general: but he has rather a grave and sedate character, and is much inclined to be social, and on good terms with every body. He made no difficulty, however, when cold, or inclined to sleep, in supplying himself with any jacket he found hanging about, or in stealing a pillow from a hammock in order to be more soft and comfortable.

"Sometimes, when teased by showing him something to eat, he would display in a very strong manner the human passions, following the person whining and crying, throwing himself off on his back, and rolling about apparently in a great rage, attempting to bite those near him, and frequently lowering himself by a rope over the ship's side, as if pretending to drown himself; but, when he came near the water's edge, he aways reconsidered the matter, and came on board again. He would often rifle and examine the pockets of his friends in quest of nuts and biscuits, which they sometimes carried for him. He had a great antipathy to the smaller tribe of monkeys, and would throw them overboard if he could; but in his general habits and disposition there is much docility and good nature, and when not annoyed he is extremely inoffensive. He approaches, upon the whole, nearer to the human kind than any other animal."

An enormous Oran-otang, of the height of seven feet, and of a proportionate bulk, was, after many attempts, killed under a tree, from which it had fallen, in consequence of several bullet wounds, at Ramboon, on the western coast of Sumatra; having, as is supposed, wandered from the large and almost impenetrable forest, situated about two days' journey inland. The skin of this extraordinary creature is preserved in the museum of the Asiatic Society of Calcutta; it is of a dark leaden colour, covered, unequally, with brownish red, shaggy and glossy hair, which is long on the flanks and shoulders. The head was well proportioned to the body, the nose prominent, the eyes large, and the mouth rather larger in proportion than that of man; the chin was fringed with a curling beard, reaching from ear to ear, and the visage by no means disgusting. His chest was wide and expanding, and waist rather slender: his legs rather short, as compared with his arms; the feet and hands had very nearly the human form, except that the thumbs were smaller, and situated higher towards the wrists, than in man. His walk was erect, but waddling, and not quick, unless when his hands were used to assist, or a branch of a tree, to push himself along, his chief agility being shown in climbing trees, and springing from branch to branch, when pursued. The perfect state of his teeth showed that he was young, and in full vigour. He was with out any vestiges of a tail.

THE PITHECOS, OR PIGMY

By the testimonies of the ancients, the Pithecos seems to be the most gentle and docile of all the Monkey kind that was known to them: it was common in Asia, as well as in Libya, and in the other provinces of Africa, frequented by the Greek and Roman travellers. And this has made me presume, that we must refer the animals mentioned by Leo the African, and Marmol, to this kind. "These animals (says Marmol) have feet and hands, and, if I may be allowed the expression, a human face, with an appearance of much vivacity and malice: they live upon corn, herbage, and all sorts of fruits; to obtain which they sally forth in large bodies, and plunder the gardens or villages. Before they venture out on this expedition, one of the company ascends an eminence, and surveys the country round. If there is no appearance of any person near, he makes signs to his companions to enter the vineyard or orchards, and begin their plunder: but as soon as the sentinel perceives any one coming, he instantly sets up a loud cry, and the whole company scamper off with the utmost precipitation, and, jumping from tree to tree, retreat to the mountains. It is a great curiosity to see those animals retreat; for the females carry four or five young ones upon their backs, and with this heavy load leap with great agility from branch to branch, though great numbers of them are taken, notwithstanding all their cunning. When they are angry, they bite; but while they are coaxed, they are very tame. Those that are tamed perform things almost incredible, and imitate mankind in almost every action they see them do." The pithecos has no tail; its canine teeth are not proportionably longer than those of mankind; its face is flat, as are likewise its nails, which are rounded at the top, like those of a man; it walks erect, is about a cubit high, and of a gentle and tractable disposition. It is however, a dirty species, and leaves an unpleasant smell wherever it goes. Besides which, it has a mischievous propensity to break and destroy whatever comes in its way.

The Pigmy Apes are fattened for food by the inhabitants of the country where they are found. The mode of catching them is curious. The Apes sleep in caverns in the woods. Near these haunts the natives place vessels containing strong liquors. The animals assemble to enjoy the unexpected repast; they drain the vessels, and the consequence is, that they become intoxicated, fall asleep, and are then easily taken.

THE GIBBON, OR LONG-ARMED APE.

Always keeps its erect posture, even when it walks upon all fours, its arms being as long as its body and legs put together. We have seen one of these animals alive; it was but young, and not then more than three feet high; though we must presume that it had not attained its full size, but that when it is adult, and in its free state, it is at least four feet. It had no appearance of any tail; it had a circle of gray, bushy hair all round the face, which gave it a very remarkable appearance: its eyes were large and sunk in its head, its face resembling that of a man, tanned, and its ears well proportioned. This Ape appeared to us to be of a gentle and tractable disposition; its motions were neither rash nor precipitate. It was fed on bread, fruit, almonds, &c., and calmly received the food that was presented to it; it was very averse to cold and wet weather, and did not live long after being brought from its native country. It is a native of the East Indies, and particularly found along the coasts of Coro mandel, Malacca, and the Molucca islands.

THE MAGOT.

This animal is generally known by the name of the Barbary Ape. Of all the Apes which have no tail, this animal can best endure the temperature of our climate. We have kept one for many years. In the summer it remained in the open air with pleasure; and in the winter, might be kept in a room without any fire. It was filthy, and of a sullen disposition: it equally made use of a grimace to show its anger, or express its sense of hunger: its motions were violent, its manners awkward, and its physiognomy rather ugly than ridiculous. Whenever it was offended, it grinned and showed its teeth. It put whatever was given to it into the pouches on each side of its jaws, and commonly ate every thing that was offered to it, except raw flesh, cheese, and other things of a fermentative nature When it slept, it was fond of roosting on a wooden or iron bar. It was always kept chained, for notwithstanding its long subjection, it was neither civilized, nor fond of its keeper: apparently, it had been but badly educated, for I have seen others of the same kind who were more sagacious, obedient, gayer, and so tractable as to be taught to dance, and suffer themselves quietly to be clothed and dressed.

This ape is about two feet and a half, or three feet high, in its erect posture; but the female is not so large as the male. It rather chooses to walk on all fours, than erect. When it sleeps, it is almost always sitting. There are two very prominent callosities on its posteriors. It differs also from the Pithecos; first in the form of its snout, which is thicker and longer, like that of a dog; whereas the pithecos has a flat visage, like the human. Secondly, in having long canine teeth; instead of which the pithecos has them no longer in proportion than those of a man. Thirdly, in its nails, which are neither so flat nor so round; and, in short, it is larger, and of a more sullen and untractable disposition than the other. It abounds in Barbary, and in the forests of India, Arabia, and Africa. In Barbary the trees are sometimes nearly covered with them.

It is probably this kind of Monkey which Robert Lade speaks of in the following terms: " We travelled over a great mountain at the Cape of Good Hope, where we diverted ourselves with hunting the large Apes, which are there in great plenty. I am not able to represent all the tractableness of these animals which pursued us, nor the swiftness and impudence with which they returned to us after we had driven them away. Sometimes they suffered us to approach so near them, that, stopping almost close to one of these animals, to take my observations, I thought myself certain of securing him, when, taking a sudden leap, he sprang above ten paces from me, and climbed up a tree with the greatest agility. They remained afterwards very quiet, looking on us as though they were pleased with our astonishment. There were some so exceedingly large, that if they had been of a ferocious nature, our number would not have been sufficient to secure us from their attacks. As it would have been useless to kill these animals, we made no use of our guns; but the captain, thinking to wound one of them, which was seated on a tree, after a long pursuit, had no sooner presented his piece, but the animal, probably from the remembrance of the execution of some of his companions, in the same manner, was so greatly terrified at it, that he fell almost motionless at our feet, and being stunned in the fall, we had not the least trouble to secure it: however, when it revived, we had occasion for all our strength and address to keep it, defending itself by biting those who were near it, which obliged us to bind our handkerchiefs over its head."

Tavernier tells us that some of the inhabitants of India adopt a ludicrous mode of avenging themselves on these Monkeys, who not unfrequently attack the women who are going to market, and rob them of their provisions. In an open space, near the retreat of the Apes, they place five or six baskets of rice, forty or fifty yards asunder, and near the baskets a number of stout cudgels, each two feet in length. They then hide themselves, to watch for the result. Thinking that no one sees them, the apes hasten towards the baskets. For a while they grin angrily at each other, then approach, then retire, and seem to dread coming to action for the prey. More daring than the males, the females at length advance to the baskets, and as they thrust in their heads to eat, the males on the one side rush forward to prevent them. This brings on a general engagement, and the cudgels are lustily plied till the weakest party is compelled to seek for shelter in the woods. The victors then quietly fall to upon their hard-earned meal.

THE BABOON,

Properly so called, has a pouch on each side of its cheeks, capable of being greatly distended; it has callosities on its posteriors, which are naked, and of a red colour, and are often of a large size and disgustingly conspicuous: its tail is crooked and thick, generally as long as, and sometimes longer than the body, but in several of the species it is extremely short. The canine teeth are much thicker and longer than those of men. Its snout is very thick and very long. terminating in a flattened extremity like that of the dog; its ears are naked. its body and limbs are strong. thick, and short; its hair is long and thick, of a reddish brown colour, and pretty uniform over the whole body It walks oftener on all fours than upright, and is from three to four feet high; but there seems to be different sizes of these animals. The female brings forth usually but one at a time, which she carries in her arms, and in a peculiar manner, clinging to her breast: in other respects, these Baboons, although mischievous and ferocious, are not carnivorous; they principally feed upon fruits, roots, and corn; they generally keep together in companies, and sally forth to commit their depredations on the neighbouring vineyards or orchards. "As they are extremely fond of grapes, apples, and ripe fruit, they assemble together in great numbers, and proceed on their enterprises with previous deliberation. The dogs who are set to watch do not easily conquer these animals, as they are extremely active, and make dexterous use of their teeth and claws. On these occasions, a part of them enter the enclosure, while one of the company stands sentinel; the rest stand without the fence, a small distance from each other, and form a line, reaching all the way from the enclosure to the rendezvous without, which is generally in some craggy mountain. Every thing being thus disposed, the plunderers within the orchard throw the fruit to them without as fast as they can gather it: or, if the wall or hedge be high, to those that sit at the top, and these hand the plunder to those next their side."

THE MAIMON,

Which is a native of the banks of the Ganges, has pouches on each side of its cheeks, and callosities on its posteriors; its tail is naked, curled up, and about the length of five or six inches; the canine teeth are not much longer in proportion than those of men; the snout is very broad; the orbits of the eyes very acute above; the face, ears, hands, and feet are naked, and of a flesh colour; the hair on the body is of a beautiful greenish gray, each hair being gray and black tipped with yellow; the extremities are gray; the region of the reins is a golden yellow; and the thighs are of a lively red. It sometimes walks erect, and at other times upon all fours: it is about two feet or two feet and a half tall when erect. It is a spiteful animal.

THE MANDRILL.

This Baboon, which also bears the name of the Ribbed-nosed Baboon, is an ugly, disgusting animal. It is found on the Gold Coast, and in other southern provinces of Africa, where the Negroes call it *Boggo*, and the Europeans *Mandrill*. This animal is the largest of the Baboon kind. Smith relates, that a female Mandrill was given to him, which was not above six months old, and had then attained the size of an adult Baboon; he likewise acquaints us, that these animals walk always erect; that they sigh and cry, like the human species; that they have a violent passion for the female sex; that they never fail to overcome them if they find them within their reach.

This animal is equally remarkable for its variety of colour, its singularity of appearance, its immense strength, and its unconquerable savageness. "Under its projecting forehead," says Mr. Bingley, "are two small and vivid eyes, situated so near to each other that their position alone gives to the physiognomy an air of ferocity. An enormous muzzle, indicative of the most brutal passions, terminates in a broad and rounded extremity of a fiery red colour, from which continually oozes a mucous humour. The cheeks, greatly swollen and deeply furrowed, are naked, and of a deep blue colour. A narrow blood-coloured ridge extends down the middle of the face, and terminates in the nose." Round the neck the hair is very long. On the sides of the head it joins that at the top, and the whole terminates in a somewhat pointed form. Each hair of the body is annulated with black and yellow; so that the whole fur has a greenish brown hue.

When standing upright, the Mandrill is in height from three feet and a half to five feet. It is to be found on the Gold Coast, in several other parts of Africa, and also in the East Indies and the Indian Archipelago. Its voice bears some resemblance to the roaring of a lion. No art or kindness can in the least subdue its brutal propensities; and its great strength renders it an object of perpetual dread to its keepers. Yet it is not, strictly speaking, a carnivorous animal; for, though it will eat meat that has been cooked, its usual food is fruits and nuts.

THE PIG-TAILED BABOON,

So termed from its short, naked, piglike tail, is the least of all the Baboon kind; it has a large thick muzzle, naked face and ears, and is of a flesh colour; the hair on the head and back is of a deep olive: it has hazel eyes, and callosities on the buttocks, which are naked, and of a red colour. It is a native of Sumatra and Japan.

THE PIG-FACED BABOON.

This animal, which is also called the Chacena, is a native of Africa, and was formerly exceedingly troublesome to the settlers in the neighbourhood of the Cape of Good Hope. Its general colour is a dusky hue, bordering upon black. The body is from two to three feet in length, and the tail is so short that, when the animal stands on all fours, it does not reach the ground. The forehead of this species is remarkably depressed; the nose is much prolonged. The voice of the Pig-faced Baboon has a near resemblance to the bark of a dog.

THE BONNETED MONKEY.

This animal is called the Chinese Bonnet by Buffon. This name it derives from the circumstance of the hair on the upper part of the head diverging horizontally from a central point towards an imaginary circumference; thus looking not unlike the round bonnet of a Chinese. Its body is from twelve to fifteen inches long, and its tail quite as much. The whole of the face is hairless, and the forehead, which is strongly wrinkled, is nearly naked. The colour of the upper part of the body is a uniform yellowish gray; the under surface derives a bluish tinge from the skin, which has but a thin covering. Eastern Asia is the native country of this species.

THE DOG-FACED BABOON.

This animal, which is between four and five feet high, and inhabits various parts of Africa and Asia, is distinguished by a longer tail than the rest of its kind; in this respect it seems to bear some affinity to the Monkey, and has been classed under that denomination by several naturalists. Its head is large, muzzle long and thick, eyes small, face naked, and of an olive colour; the hair on its forehead is separated in the middle, and hangs down on each side of the face; from thence down its back as far as its waist it is long and shaggy, of a bluish gray colour, freckled with dark spots; the hair on the lower part of the body is short; and its buttocks are bare and red. It lives in troops, commits great depredations in gardens and cultivated grounds, and is exceedingly strong, vicious, and impudent.

THE URSINE BABOON

Is not unlike the last, but rather less. Its nose is long, head large, ears short, forehead high and prominent, terminating in a ridge; the body thick and strong, covered with long dusky hair, which gives it the appearance of a young bear; its tail is half the length of its body; its buttocks red. This animal is very numerous about the Cape of Good Hope. Troops of them make expeditions for the sake of plunder, in which, to prevent being surprised, they place a sentinel, which, upon the sight of a man, gives a loud yell; when the whole troop retreats with the greatest precipitation; the young ones leaping on the backs of their parents, and clinging closely to them. When the Ursine Baboon sees a single person sitting and eating in the fields, it will steal behind him, snatch his food from him, retire to a little distance, and begin to devour it; now and then holding it out in its paws towards the loser, with many laughable grimaces, as if offering to restore the prize. It may be tamed, and will then guard its master's property with all the sagacity and fidelity of a dog.

THE WANDEROO AND THE LOANDO.

As these two animals seem to be but one and the same species, we have, therefore, here preserved the two names they bear in Ceylon, as they at least form two distinct breeds. The body of the Wanderoo is covered with brown and black hairs, and he has a long white head of hair, and a monstrous white beard; the body of the Loando, on the contrary, is covered with whitish hairs, but he has the like large head of hair and beard. There is still a third variety found in the same country, which may, possibly, be the common stock of the other two, because it is of a uniform whitish colour over its body, with the like head of hair and beard. These animals are baboons, and not, as some have imagined, monkeys, as they have all the characters, as well in shape as in disposition, and are of the same savage nature, and even more ferocious.

"The white monkeys (says Forbin) are sometimes as big as the largest English mastiff; they are more dangerous than the black: they principally attack women, and often, after having greatly injured them, finish their cruelty by strangling. Sometimes they even come to their houses; but the Macaroes, who are very jealous of their wives, take care to prevent their entrance into their habitations; and the females not liking (as the chevalier humorously relates) either the manners or the figure of the paltry gallants, boldly stand on their defence, and with clubs, or whatever other arms they can provide, instead of answering their caresses, oblige their ugly suitors to return, not, however, before they have damaged or plundered every thing they can lay their hands on." It is, however, exceedingly doubtful whether the white monkey, here described, be of the same species as the Wanderoo.

THE MACAQUE AND THE EGRET.

Of all the Apes, or Monkeys, with long tails, the Macaque approaches nearest the Baboon; its body being short and compact, like that animal' · its head thick, its snout broad, its nose flat, its cheeks wrinkled; but it is bulkier and taller than most other Monkeys. It is also so extremely ugly, that it might well be looked upon as a smaller kind of the Baboon, if it did not differ in the tail, which is crooked, but longer and tufted; whereas that of the Baboon, in general, is extremely short. This species is a native of Congo, and other southern parts of Africa. It is numerous, and subject to many varieties with respect to its size, colour, and disposition of the hair. The body of that described by Hasselquist was more than two feet long; and those which we have seen were not above one foot and a half. That which we here term the *Egret*, because of the plume on its head, seems to be only a variety of the first, which it perfectly resembles, excepting the difference before mentioned, and some other slight varieties in the hair. Both of them are tractable and docile; but, independent of the scent which they diffuse around them, they are so misshapen, and even so hideous when they grimace, that we cannot look on them without horror and disgust. These Monkeys go in flocks. Bosman relates, that they take a melon in each hand, under their arms, and one in their mouths, which they go off with; if the pursuit is hot, they drop first that from under their arm, then that from their hand; and if it be continued, they at last let fall that which they had hitherto kept in their mouths. In other respects, says this traveller, they examine the melon beds carefully, and what does not please them they throw away, and tear up others; so that, by this nicety, they do exceedingly great injuries to many of the orchards and vineyards by their depredations.

THE PATAS.

Is a native of the same country, and is nearly of the same size, as the macaque, the body being only somewhat longer, the face not so ugly, and the hair fairer. It is, indeed, of so brilliant a red, that the animal looks as if it were painted. The face is of a flesh colour, and the ears black. The length of this animal is about half a yard. In Senegal it is called the Red Monkey.

I am inclined to think, that the Monkey spoken of by Marmol, and said to be of the colour of the wild cat, and to be a native of Africa, is only a variety of the Patas species. These animals are not so subtle as others of their kind, but are possessed of an extreme curiosity. "I have seen them (says Bruce) descend from the top to the branches of very high trees, to view the vessels on the water, which they admired for some time, and seemed diverted with what they had seen; they quitted their stations for their companions to have the same sight: some even threw the branches of the trees at the French, who returned their salute with a musket ball; some were killed, others wounded, and the rest fell on the ground in the utmost consternation. One part uttered most hideous cries, while another was picking up stones to throw at their enemies, and a third were occupied in the easing of nature into their hands, which presently they sent with vengeance to the spectators; but perceiving, at length, how unequal the battle was, they desisted. and prudently retired."

THE MALBROUCK.

These animals are found in Bengal,* where travellers inform us they plunder whole fields of grain, and plantations of sugarcanes; and while one stands sentinel on a tree, the others load themselves with the booty. But if the owner of the field or plantations appear to interrupt their depredations, their faithful companion on the look out gives notice by crying out *houp*, *houp*, *houp*, which the rest perfectly understand; and all at once throwing down their plunder, which they hold in their left hands, they scamper off upon three legs, holding the remainder in their right, and save themselves from their pursuers by climbing up trees, where they have their general abode. The females, even loaded with their young ones, clasp them close to the breast, leap like the others from branch to branch, and escape with the rest. When it happens they cannot find any provision in the fields, they get on the tops of houses, and, having pulled off the tiles, do great damage to the inside. They do not eat a single thing without smelling at it for a long time beforehand; and when they have satisfied their hunger, they put the remainder in the pouches on the sides of their cheeks for the next day: they destroy the nests of birds, and never fail to throw the eggs on the ground when they want appetite or inclination to eat them.

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*Some later naturalists are of opinion, that the Malbrouck is not a native of India, but of Africa.

The most formidable enemy these animals have is the serpent, no other animal of the forest being able to surprise them, as they are so exceedingly swift and subtle, and easily climb up and seat themselves on the tops of the highest trees. "The Monkey," says a traveller, "has it in his power to be master of the forest, for there are neither tigers nor lions which can dispute the possession with it: the chief animal it has to fear, and which attacks them both night and day, is the snake. There are some snakes in those forests of a prodigious size, which wind up the trees where the Monkeys reside, and, when they happen to surprise them sleeping, swallow them whole before the little animals have time to make a defence."

The Malbrouck has pouches on each side of its cheeks, and callosities on its posteriors; its tail is very near as long as the body and head put together. The eyelids are of a fleshy, and the face of an ash colour; the ears are large, thin, and of a flesh colour; they have a list of gray hairs on them, like the mona; but in other parts are of a uniform colour, approaching towards a brown on the upper parts of the body, and towards a gray on the lower. It goes on all fours, and is about a foot or a foot and a half long from the snout to the insertion of the tail.

THE MANGABEY.

We have seen two of this kind of Monkey: both were sent to us by the denomination of *Madagascar Monkeys*. They are however, most probably, natives of the western coast of Africa. They are easily distinguished by a very apparent character. The Mangabey has its eyelids naked, and of a striking whiteness. It has pouches on each side of its cheeks, and callosities on its posteriors. Its tail is as long as the head and body put together, and it has a prominent roll of hair over its eyes. Its snout is thick and long, its eyebrows rough and bristly, its ears black and almost naked: the hair of the upper parts of its body brown, and those below gray. There is a variety in this species, some being of a uniform colour, and others having a circle of white hair round the neck, and the form of a beard round their jaws. They walk on all fours, and are near a foot and a half long from the snout to the tail. From the peculiarity of their eyelids, they have the name of the White Eyelid Monkey.

THE MONA, VARIED, OR COMMON MONKEY,

Is the most common of the Monkey tribe. We kept one of them alive for many years. This alone is sufficient to prove that it is not a native of the hot countries of Africa and India. In fact, it is met with in Barbary, Arabia, Persia, &c. The visage of this animal is of a brown hue, with a kind of white beard, mixed with yellow and a little black; the back is red and black; the belly and the hind parts of the thighs and legs whitish, though the foreparts of the two last are of a black colour: the tail is of an ash-colour, marked with two white spots, one on each side, at its insertion. On its forehead the hair is of a gray colour, in the form of a crescent, and between the eyes and the ears is a black stripe, as there is from the ears, and shoulders, and arms.

In general, the disposition of the Monkey is much more tractable than the baboon, and not so sullen as the ape: it is extravagantly spirited, but not ferocious, being docile through fear. The Mona is, in particular, susceptible of education, and even attached to those persons who take care of it. That which we brought up would suffer itself to be stroked and handled by those it knew, but would often bite strangers. It was chained, but was very desirous of its liberty: for, when it either broke its chain or got loose, it would run away, and would not suffer itself to be retaken by any other person than its master. It ate every thing that was offered to it, especially flesh, bread, and its favourite food, fruits. The Mona is about a foot and a half in length.

THE CALLITRIX, OR GREEN MONKEY,

Has got pouches on each side of its cheeks, and callosities on its posteriors: the tail is much longer than the whole body, and is terminated by a brush of yellow hair. Its head is small, its snout long, and its face and ears of a black colour, with some long yellow hairs on the cheeks: it has a narrow stripe instead of eyebrows, formed of long black hairs: above, it is of a fine olive-green colour, with a little yellow mixed with it; and beneath, it is of a dirty white: it walks on all fours; and the length of its body, including its head, is about fifteen inches.

The Callitrix is found in Senegal, as well as in Mauritania and the neighbouring islands. Mr. Adanson relates, that the environs of the woods of Podor on the banks of the Senegal are filled with green Monkeys. "I only discovered these animals (says he,) by their breaking off the branches of trees, and throwing them down on my head; for they were so very quiet and nimble in their tricks, that I could scarcely hear them. I did not walk far, before I killed three of them without in the least terrifying any of the rest; however, when numbers felt themselves wounded, they began to retreat, some concealing themselves behind large branches, and others descending and running away; but the greatest number leaped from the top of one tree to another. During this little fray, I killed about twenty-three in less than an hour, without any of them uttering a single cry, although they made an appearance of attacking me."

THE MUSTACHE

Seems to be a native of the same country as the macaque. It is, probably, the same animal as the Guinea travellers call *White Nose*, from its upper lips being of a white colour, whereas all the rest of its face is of a deep blue. It seems to be one of the most beautiful of the Monkey kind.

The Mustache has pouches on each side of its cheeks, and callosities on its posteriors. The tail is much longer than the head and body together. Its face is of a deep blue, with a great and broad white mark in the shape of a chevron under the nose, which is naked. There is only a slight edging of black hair both on the upper and under lip. Its body is short and compact. There are two thick tufts of hair of a bright yellow colour below the ears, and another tuft of bristly hair upon the head; the hair of the body is of a greenish cast, and the breast and belly of an ash colour. It walks on all fours, and is about a foot long. The female is subject to a periodical emanation.

THE TALAPOIN

Is a pretty small animal; its name indicates it to be a native of Siam, and other eastern provinces of Asia, but we cannot speak positively as to that point; however, it is certain it is a native of the Old Continent, and not found any where in the New, from the pouches on each side of its cheeks, and callosities on its posteriors, which characters neither belong to the sagoins, nor sapajous, which are the only animals of the New World which we can compare with the Monkey.

Edwards has given a figure and description of a Monkey, by the name of the Black Monkey, of a moderate size, which seems to approach nearer the Talapoin than any of the rest. It is also, probably, the same species of Black Monkeys which Bosman speaks of, by the name of *Bourdmanmetjes*, the skin of which, he informs us, makes a good fur. M. Cuvier, however, is of opinion, that the Talapoin is only the malbrouck in its youthful state.

THE DOUC

Is the last among the class of animals, called Apes, Baboons, and Monkeys. This animal, without belonging to any one of these three precisely, yet partakes of them all. Of the Monkey, in the length of its tail; of the Baboon, in its size; and of the Ape, by the flatness of its face. It has, besides, a very particular character, by which it seems to fill up the chasm between the Monkey and the sapajou. These two families of animals differ between themselves, the Monkey having fleshy posteriors, and all the sapajous having them covered with hair. The Douc is the only Monkey which has hairy posteriors like the sapajou: it resembles it also by the flatness of the snout; but it is infinitely nearer the Monkey than the sapajou, by its long tail, and by other very essential characters

Its variegated skin seems to indicate the ambiguity of its nature, and at the same time distinguishes its species in a very evident manne'

The Douc has no callosities on its posteriors, and is clothed all over with hair: its tail, though long, is not so long as its body and head put together; its face is covered with reddish down with a white beard; the ears are naked, and of the same colour as the face; the lips brown, as are the orbits of the eyes: the colour of the hair is very bright, and very variegated; it has a collar of a purple colour round its neck; its forehead, body, and arms, are white; its hind legs are of a red chestnut; it is black above the forehead and the upper part of the arms; the parts below the body are of an ash colour; the tail is white as well as the bottom of the loins; it more frequently walks on two feet than on four; and it is three feet and a half or four feet high when it is upright.

Travellers inform us, that the larger Monkeys of the southern parts of Asia produce bezoar in their stomach, which is superior to that of the bezoar of goats and gazelles. These larger Monkeys of the southern parts of India, are the wanderoo and the Douc. We, therefore, suppose that we must refer the production of the bezoar to this species. It is pretended, that this Monkey bezoar is always of a round form, whereas the other bezoars are of different sizes and figures.

OF THE MONKEY TRIBE IN AMERICA

All the four-handed animals which we have given a description of, and which we have comprehended under the general names of Apes, Baboons, and Monkeys, exclusively belong to the Old Continent: and all those which remain to be spoken of, are, on the contrary, only found in the New World. We here distinguish them by two generical names, as we can divide them into two classes; the first into that of the Sapajou, and the second into the Sagoin. Both these animals have their feet nearly like those of the Ape and Monkey kind, but they differ from the Ape in having tails. The sapajou has a very long tail, which it makes use of to seize and lay hold of things, and by which it suspends from the branches of trees. The tail of the sangoin, on the contrary, is proportionably longer than that of the sapajou, but is weak and straight, so that they cannot make use of it either to lay hold of any thing, or for the purpose of climbing : this difference is so very apparent, that it is alone sufficient to distinguish the sapajou from the sagoin.

THE WARINE AND THE ALOUATO

Are the largest of these animals belonging to the New Continent; they surpass the size of the largest Monkey, and approach the size of the baboon : they have a long tail, and are moreover of the sapajou family, in which they hold a very distinct rank, not only with regard to size, but also to voice, which sounds like a drum, or, as others say, like the screaming of immense herds of swine, and may be heard at a very great distance. From the excessive noise which they make they have obtained the name of the Howling Monkey. Marcgrave informs us, " that every morning and evening the *Warines* and the *Alouatos* assemble in the woods ; that one among them seats himself on an elevated place, makes a sign with his hand to the rest to seat themselves round him ; as soon as he sees them all seated, he begins an oration with so quick and loud a voice, that, at a distance, it might be imagined they were all making a noise together. During the whole discourse the rest keep a profound silence, and when it is ended, he makes a signal to the rest to answer him, and immediately they all set up a cry together, till by another sign with his hand he orders them to be silent : when they are immediately obedient and quiet. Then the first renews his discourse, or his song, which when finished, and the others have paid the utmost attention to it the whole assembly breaks up and separates." This singular noise is made by the instrumentality of a long bony process in the throat. According to the same author, " the face of the Warine is broad, the eyes black and sparkling, the ears short and round, the tail naked at the extremity, with which it holds firmly whatever it encircles; the hair of the body is black, long, and glossy; it is much longer under the chin, which forms a kind of round beard : the hair on the hands, feet, and a part of the tail, is brown. The male is of the same colour as the female, and only differs from it in being a little larger. The females carry their young on their backs, and thus loaded leap from branch to branch, and from tree to tree. The young one clasps the narrowest part of the body of the mother with its hands and arms, and thus holds itself firmly fastened, whatever motion its parent makes. In other respects, these animals are wild and mischievous: they can neither be tamed nor subdued, and bite dreadfully. As they live only on fruit, grain, and some insects, their flesh is not bad eating. It is like that of the hare, but a little sweetish, for which reason a good quantity of salt is put to that which is roasted: the fat is yellow, like that of the capon, and of a very fine flavour. They easily fasten upon the branches of trees, and stick either by their hands, feet, or tail, wherever they touch, which renders it very difficult to take them, even after they are shot, for if they are only wounded, they will not fall to the ground, but cling to the branch, and remain on the tree where they were shot, till they drop off by putrefaction. What appears singular is, that the moment one of them is wounded, the rest assemble round, and clap their fingers into the wound, as if they were desirous of sounding its depth. If the blood then flows in any quantity, they keep it shut up, while others get leaves, which they chew, and thrust into the orifice. The females bring forth only one at a time."

The Alouato has the same characters as the Warine, and only seems to differ from it in having no beard, and a reddish-coloured hair, whereas, that of the Warine is black.

THE COAITA.

Next to the warine and the alouato, the Coaita, or Four-fingered Monkey, is the largest of the sapajous. There was one alive at the Duke of Bouillon's, where, by its familiarity and forward caresses, it merited the affection of those who had it under their care; but in spite of the good treatment and attention paid to it, it could not resist the winter of the year 1764. It differs greatly in disposition from the warine and the alouato, which are wild and untameable. It also differs from them in having but four fingers and no thumb to the fore paws: by this character alone, and its holding tail, it is easily distinguished from the monkey kind. In the use of their tail these animals are singularly dexterous. They can pick up with it even straws and bits of wood; and M. Audebert tells us, that he saw one of this species carry hay in its tail to make its bed, and move and spread it about as easily as an elephant could have done with his trunk.

In climbing, too, this member is of great use. "There are (says Dampier) in the Isthmus of America, numbers of Monkeys, some of which are white, but the most part black—some have beards, others none. These Monkeys are very droll, and performed a thousand grotesque postures as we traversed in the woods. When they are unable to leap from one tree to another, on account of the distance, or the tree being separated by a river their dexterity is very surprising. The whole family form a kind of chain, locking tail in tail, or hand in hand, and one of them holding the branch above, the rest swing down, balancing to and fro, like a pendulum, until the undermost is enabled to catch hold of the lower branches of some neighbouring tree. When the hold is fixed below, the Monkey lets go that which was above, and thus comes undermost in turn; but, creeping up along the chain, attains the next branches of the tree like the rest; and thus, they all take possession without ever coming to the ground."

They have the address to break the shell of the oysters to eat them. They generally produce only one or two young ones at a time, which they carry upon their backs; they feed upon fish, worms, and insects, but fruit is their general food, and they grow fat when it is ripe, when, it is said, their flesh is good and exquisite eating.

The Coati is about a foot and a half long, and its tail is longer than the head and body measured together: it goes on all fours.

THE SAJOU, OR CAPUCHIN MONKEY.

We are acquainted with two varieties of this species; the Brown Sajou commonly called the *Capuchin*

Monkey; and the Gray Sajou, which only differs from the other in the colour of its hair; they are both lively, active, and very pleasing by their tricks and nimbleness. They are, however, fantastical in their tastes and affections: they seem to have a strong inclination for some people, and as great an aversion for others. They are natives of French Guiana. They usually live in troops of from twenty to forty individuals. They often whistle, and when they are enraged they shake their heads violently, and utter, in a ferocious tone, the syllables *Pi, ca, rou.*

THE SAI, OR WEEPER.

We have seen two of these animals, which seem to make a variety in the species. The hair of the first is of a deep brown; the hair of the second, which we have called the *White-throated Sai,* is white on the breast, neck, ears, and jaws. Travellers have described these animals by the name of *Howlers,* from their plaintive moan. Others have called them *Musk Monkeys,* from their having, like the macaque, that peculiar smell. They belong to the sapajou family, as they have a holding tail: they have only two teats, and bring forth but one or two at a time. They are gentle, docile, and so timorous, that their common cry, which resembles that of the cat, is dwindled down to a kind of sighing, when they are threatened. Their food, in this climate, is principally snails and beetles, which they prefer before any other; but in their native country of Brazil, they chiefly live upon grain, and the wild fruit they pluck from trees, whence they very seldom descend till they have stripped their habitation of its treasure.

THE SIAMIRA.

Is vulgarly known by the name of the *Golden, Orange-coloured,* or *Yellow Sapajou.* It is common in Guiana, where it is called *Camiri* by the natives. By its air, size, the brilliant colour of its coat, the fulness and brightness of its eyes, and its small, round visage, the Siamira has ever taken the lead of every other Sapajou: it is, in fact, the most beautiful and delicate of the kind, and the most difficult to transport and preserve in other countries. Its tail, without being absolutely useless and weak, like that of the sagoin, is also not so muscular as that of the sapajou: its tail may be said to be but half holding; and though it makes use of it to climb up trees, yet it can neither strongly hold, nor firmly fix itself with it. It is scarcely more than ten or eleven inches in length. It sits upright on its hinder feet with great ease: but it walks commonly on all fours.

Captain Stedman tells us, that he daily saw them passing along the sides of the river, in regular order, with their young at their backs, looking not unlike small knapsacks. The foremost of them leaps from the extremity of one bough to that of another, which is often at a surprising distance, and so active are these animals, and so well do they measure the intervening space, that he never misses his aim. All the rest follow him in succession; and even the females, burdened as they are with the young ones, which cling closely to the mother's back, perform the same leap with equal safety.

THE SAKI,

Commonly called the *Fox-tailed Monkey*, from its tail being clothed with very long hair, is the largest of the sagoin kind, being about seventeen inches long, whereas the size of the five other sagoins is not above nine or ten. The Saki has very long hair on its body, and still longer on its tail. Its face is red, and covered with a whitish down. It is a native of Guiana, and lives in the woods, but is rare. The female brings forth but one offspring at a time.

THE TAMARIN, OR GREAT-EARED MONKEY.

This animal, which is a native of the hottest parts of South America, is about the size of a squirrel, and has a naked face, of a swarthy flesh colour; its upper lip somewhat divided; its ears are very large and erect; its hair is soft, shaggy, and of a black colour: the hands and feet are covered with orange-coloured hair, very fine and smooth; its nails are long and crooked; and the tail is black, clothed with short hair, and twice the length of its body. It is a lively, pleasant animal; easily tamed; but so delicate, that it cannot bear a removal to a less temperate climate.

THE WISTITI, OR STRIATED MONKEY.

The name of this animal is taken from the sound ot its voice. It is smaller than the tamarin, being not above six inches long, and its tail more than double that length, which is annulated black and white, like the macaque. Its face is naked, and of a flesh colour. It has two very singular tufts of long white hair on the fore part of the ears, which, although very large, cannot be seen by looking at the full face of this animal. Mr. Edwards says, that, when it is in good health, it has much hair and tufted; that one of those which he saw, and which was healthy, fed on several things, as biscuits, fruit, pulse, insects, snails; and, being one day unchained, he struck at a little gold fish which was in a glass globe, killed it, and devoured it with the greatest avidity; that afterwards, some small eels being put before him, he was frightened when they twisted about his neck, but that he soon conquered and eat them. It is a great enemy to cats. These animals, when young, have an ugly appearance, having scarcely any hair on their bodies. They cling closely to the teats of their dam; and as they grow older, they fix themselves on her back or shoulders; when she is weary of carrying them, she releases herself by rubbing against the wall.

The Striated Monkey is of a hardy nature, and has sometimes produced young ones in Europe, even as far to the north as Paris. Most of the individuals have a somewhat musky smell. The voice is a kind of shrill hissing whistle.

THE MARIKINA

Is sufficiently known by the vulgar name of the Small Lion Monkey. It is about eight inches long, and has a small tuft of hair at the end of the tail; its hair is tufted, long, soft, and glossy; the head is round; the face is brown; the eyes red; the ears round, naked, and concealed under the long hair which encompasses the face.

This hair is of a bright red, that on the body and tail of a very pale yellow, approaching towards white. This animal has the same manners, the same vivacity, and the same inclination as other sagoins, and seems to be of a more robust temperament. We have seen one which lived five or six years at Paris, by the care alone of keeping it, during the winter, in a chamber wherein a fire was kept every day. It is a native of Guiana and Brazil, especially in the vicinity of Rio Janeiro, and is a favourite pet of the Creoles.

THE PINCH, OR RED-TAILED MONKEY,

Is about nine inches long; and its tail is as long again. It is remarkable for a kind of white and striped hair on the top and sides of the head; its face is black, shaded by a small gray down; its eyes are black; its tail of a bright red at its insertion, and even as far as half its length, where it changes to a deep brown. The hair of the upper parts of the body is of a brown colour; that of the breast, belly, hands, and feet is white; the skin is black, even where covered with white hair; its throat is naked, and black, like its face; its voice is soft, and resembles more the chirping of a little bird than the cry of an animal; it is very delicate, and cannot be transported from America into Europe, without the greatest precaution.

THE MICO.

We owe the knowledge of this animal to M. de la Condamine, and shall therefore give this author's account of it, in his Voyage up the Amazon River. "The Mico which the governor of Para made me a present of, was the only one of its kind that had been seen in the country. The hair of its body was of the most beautiful silver colour, its tail glossy, and approaching to black. It had another more remarkable singularity; its ears, jaws, and snout were tinctured with so bright a vermilion as scarcely to be thought natural. I have had it a year; and it was alive at the time I was writing this account, almost within sight of the French coast, where I hoped to have brought it alive; but, notwithstanding the continual precautions that I took to preserve it from the cold, yet the rigour of the season probably killed it."

MAIMON. P. 262.

ORAN OTAN. P. 251.

CHAPTER XXII.

The Tartarian Cow—The Tolai—The Zisel—The Zemni—The Pouch—The Perouasca—The Souslik—The Golden-coloured Mole—The White Water Rat—The Guinea Hog—The Wild Boar of Cape Verd—The Mexican Wolf—The Alco—The Tayra—The Philander of Surinam—The Akouchi—The Tucan—The Brazilian Field Mouse—The Aperea—The Tapeti—The Juda Goat—The Kanguroo—The Silver-haired Kanguroo—The Kanguroo Rat—The Wombach—The Duck-billed Platypus—A View of the Animals peculiar to each Continent

THE TARTARIAN COW.

Mr. Gmelin, in the new Memoirs of the Royal Academy at Petersburg, has given the description of this animal, which seems, at first sight, to be a quite different species from all those we have spoken of under the article of Buffalo. "This cow," says he, "which I saw alive, and had painted in Siberia, came from Calmuchia, and was about the length of two Russian ells and a half; by which model we may judge of the other dimensions. The body resembles that of the common cow; the hair on the body is black, except on the forehead and spine of the back, where it is white. The neck is covered with a mane, and all the rest of the body with a very long hair, which descends to the knees, so that the feet appear very short; the back is raised in the form of a hunch; the tail resembles that of a horse, white and well clothed with hair; the fore feet are black, and the hinder ones white; there are two tufts of long hair, one before and the other behind. The excrements are of a more solid nature than those of the common cow; and it grunts like a hog. It is wild, and even ferocious; for, excepting the man who feeds it, it buts all those that come near it with its head; and it dislikes the company of domestic cows." This animal, which is called the Yack, lives wild in the mountains of Thibet, and has been domesticated by the Mongols. Its tail is used as a standard by the Oriental nations.

THE TOLAI.

This animal, which is very common near Baikal Lake, in Tartary, is in size between a hare and a rabbit, the latter of which it resembles in shape, quality, smell, and colour, and also in the habit of burrowing in the earth to conceal itself. It differs only in the tail, which is considerably longer than that of the rabbit, and is black above and white underneath. Its head and back are a pale gray, mingled with brown; the breast and under part of the body are white, as are also the muzzle and round the eyes.

THE ZISEL.

This animal, which is also called the Earless Marmot, is smaller than the hamster: its body is long and slender, like the weasel; whereas, that of the hamster is thick and compact, like that of the rat. It has no external ears, but only auditory passages concealed under the hair. The Zisel is of a grayer, or of a more uniform colour, than the hamster; and the latter is marked in the fore part of its body with three large white spots on each side. These differences, joined to that of their not mixing together, though natives of the same country, are sufficient to leave us not the least room to doubt of their being two different species. It inhabits Russia, as far as Kamtschatka, and the islands between Asia and America; it is found also in Persia and China, but rarely in any part of Europe, except Russia. It never frequents bogs and woods, but dwells in open, high, dry, and uncultivated places, and prefers turfy and loamy soils, near the high roads. Each individual has its separate burrow, in which it lays up its store of winter provision. During the great severity of the frost it lies torpid. In size they vary considerably; some being as large as the marmot, others no bigger than the water rat. Their colour is as various; but generally it is a yellowish white on the upper parts, and dirty white on the belly. When the fur is varied with waves or small spots of white, the animal is the Souslik, described by Buffon in a subsequent page of this chapter.

THE ZEMNI.

There is another animal in Poland and Russia, which is called *ziemni*, or *zemni*, of the same race as the *zisel*, but larger, stronger, and more mischievous. It is somewhat smaller than the domestic cat; its head is large, its body slender, and its ears short and round. These have four great incisive teeth: the two in the lower jaw are thrice as long as the two in the upper. The feet are very short and hairy, divided into five toes, and armed with crooked claws; the hair is soft, short, and of a mouse gray colour; the tail moderately large; its eyes small and hid, like those of the mole. Its disposition and habitudes are nearly the same as those of the hamster and zisel; its bite is dangerous; it eats greedily, and plunders orchards and gardens; it burrows; and lives upon grain, fruit, and pulse, which it stores in magazines for its winter support. Pennant names this animal the Podolian Marmot.

THE POUCH,

Called also the Surmulot, is larger than the domestic black rat; its snout is long; its fur is gray, with brown above, and white beneath; its tail is almost as long as its body. It burrows, and commits depredations in the gardens, &c. Though not web-footed, it swims well. There are such numbers near Suraz and in Volhinia, that the inhabitants were obliged to abandon the culture of their gardens. Its native country is India, whence it was introduced into France in 1750, and has since been very common in the seaports.

THE PEROUASCA,

Which the Russians call *Perewiaska*, and the Polanders *Pizewiaska* (a name we may translate the *cinctured weasel*,) is not so large as a polecat, covered with a whitish hair, transversally striped of a reddish colour, which stripes appear as so many girdles. It lives in the woods, and burrows in the earth; its skin is sought after, and makes a very beautiful fur.

THE SOUSLIK.

There is found at Casan, and in the provinces which the Volga pervades, a small animal, called *Sous* *lik* in the Russian tongue, of which very beautiful furs are made. Its tail is short, like the field mouse: but what distinguishes it from that and every other rat, is its coat, which is of a grayish hue, sprinkled with small spots of a glossy and bright white colour: these little spots are exceedingly small, at a small distance from each other; they are more apparent upon the loins of this animal than on the shoulders and head. "The rats called Sousliks," says M. Sanchez, "are taken in great numbers on the salt vessels in the river Kama, which descends from Salikamskia, where the salt pits are, and falls into the Volga below Casan. The Volga, from Simbuski to Somtoff, is covered with these salt vessels; and these animals are taken on those vessels, and the borders of those rivers: their name is Souslik, i. e. *dainty-mouthed*, because they are very fond of salt."

THE GOLDEN-COLOURED MOLE.

Not to omit any animals that belong to the North, we shall take notice of a kind of mole found in Siberia, called the *Golden-coloured Mole*, the species of which may be different from the ordinary mole, because the Siberian has no tail, and a short snout; only three toes to the fore feet, and four to the hinder; whereas, the common mole has five toes on every foot. The snout is shorter than that of the common mole; the nose naked; the head and body about four inches long; the fur above is varied with glossy green, golden and reddish copper colour, the lower is a cinereous brown. Pennant calls it the Siberian Mole, but it is also found at the Cape of Good Hope.

THE WHITE WATER RAT.

The European Water Rat is again seen in Canada, but its colour is different; its back only is brown; the rest of the body is white and brown: the head and snout are white, as is the extremity of the tail; the hair seems softer and more glossy than that of our Water Rat; but they are alike in every other respect; so that we cannot doubt but that these two animals are of the same species; the whiteness of the hair being produced by the coldness of the climate.

THE GUINEA HOG

Is nearly of the same figure as our hog, and about the same size as the Siam hog; that is to say, smaller than our boar, or our hog. It is a native of Guinea, and has been transported into Brazil, where it has multiplied, as in its native country; it is domestic and tame: its hair is short, red, and glossy; it has no bristles, not even on the back; the tail only, and the crupper near the tail, are covered with longer hair than the rest of the body: its head is not so large as that of our hog; and its ears are very long, and turned backwards over its neck; its tail is as much longer, almost touching the ground; and it has no hair towards its extremity.

THE WILD BOAR OF CAPE VERD.

THERE is another hog, or wild boar in Africa which is found from Cape Verd to Congo, and also in Madagascar. By the number of its teeth, and enormous size of its two tusks of the upper jaw, it seems to be of a different breed, and perhaps, of a different species from every other hog, and approaches nearer the babiroussa. These tusks resemble ivory horns, rather than teeth; they are half a foot long, and five inches round at the base, and are crooked nearly like the horns of a bull. This animal resides principally in subterranean recesses, which he digs with his nose and hoofs; he is exceeding strong, and in his wild state is of a savage nature.

THE MEXICAN WOLF

HAS the same figure, the same appetites, and the same habitudes as the European or North American wolf; and every thing seems to prove them to be of one and the same species; its head however, is larger, its neck thicker. and the tail not so hairy; above the mouth, there are some thick bristles, but not so rough as those of the hedgehog; the body is covered with grayish hair, marked with some white spots; the head, which is of the same colour as the body, is crossed with brown stripes; and the forehead is adorned with fallow coloured spots; the ears are of a gray colour, like the head and body. There is a long spot, of a fallow colour, on the neck; a second spot, like the first, on the breast; and a third on the belly. The flank is marked with transversal lists, from the back to the belly. The tail is gray, and marked with a fallow spot on the middle: the legs are striped, from top to bottom, of a gray and brown colour. This Wolf, as we observe, is the most beautiful of the kind; and its fur is greatly valued.

THE ALCO, OR MEXICAN DOG.

Besides the dogs, says Fernandez, which the Spaniards have transported into America, we meet with three other species there, which resemble ours, both in nature and manner, and which do not greatly differ from it in form. The first, and the longest of these American dogs, is that called *Xoloigtcuintli.* What is particularly remarkable in these animals is, their being without hair, and only covered with a soft, close skin, marked with yellow and blue spots. The second is clothed with hair, and, with respect to its size, sufficiently resembles our little Malta dogs. It is marked with white, black, and yellow; it is singular and amusing by its deformity, having a hunched back, and an exceedingly short snout; so that the head seems to shoot immediately out of the shoulders; it is called *Micuacanens,* from the name of its country. The third kind of these dogs, called *Techichi,* sufficiently resembles our little dogs; but its look is dull and savage. The Americans eat their flesh. The word *Alco* appears to be a generical term.

THE TAYRA, OR GALERA.

Which Pennant calls the Guinea Weasel, is about the size of a small rabbit, and resembles the weasel or the ferret. It burrows like those animals, and has its fore feet very strong, and considerably shorter than the hinder ones. Its snout is elongated, a little pointed, and adorned with a whisker. The body is oblong, and greatly resembles that of a rat; it is covered with brown hair, some of which is pretty long, and in others much shorter. It is a native of Guinea, very common about the negro villages, and exceedingly destructive to poultry.

THE PHILANDER OF SURINAM.

This animal belongs to the same climate, and is of a near species to the sariga, marmose, cayopolin, and phalanger. It has very sparkling eyes, surrounded with a circle of deep brown hair. The body is covered with a soft hair, or rather a kind of wool, of a reddish colour, which is fair on the back, and of a yellowish colour on the snout, forehead, belly, and feet. The feet resemble the hands of the ape; the fore feet having four fingers and a thumb, with short and obtuse nails; whereas, only the thumb, or great toe of the hinder feet is flat and obtuse, the rest being armed with small, sharp claws. The young of these animals grunt somewhat like a pig: they get on the back of their dam, and fix themselves there, by fastening their tails to hers. In this situation, which is familiar to them, they are carried with as much safety as swiftness.

THE AKOUCHI

Is common in Guiana, and other parts of South America, and inhabits also St. Lucia and Grenada. It differs from the agouti by having a tail. The Akouchi is generally smaller than the agouti; but its hair is not red. but olive.

THE TUCAN, OR MEXICAN SHREW,

Is a little larger than our mole, and, like that, is fat and fleshy, with such very short legs, that its belly touches the ground. Its tail is short; its nose sharp; its ears small and round; its eyes so very small, that they may be said to be useless; but differs from the mole in the colour of its hair, which is of a reddish hue, and by the number of toes, having only three to the fore feet, and four to those behind. It seems still farther to differ from it, by its flesh being good to eat. It burrows and makes such a number of cavities, that travellers can scarce tread with safety. If it gets out of its hole, it knows not how to return, but begins to dig another.

THE FIELD MOUSE OF BRAZIL

Is considerably larger than ours, being about five inches from the extremity of the snout to the insertion of the tail, which is only two inches, and, consequently, much shorter in proportion than that of the common field mouse. Its snout is pointed, and its teeth very sharp.

THE APEREA.

THIS animal, which is found in Brazil and Paraguay, is neither a rabbit nor a rat; yet it seems to partake something of both. It is about a foot long, by seven inches in circumference. The hair is of the same colour as our hares, but white upon the belly. It has also, like that animal, a slit lip, large incisive teeth, and a whisker about the mouth; but its ears are rounded, like those of a rat; the fore legs are only three inches high; those behind are longer. The Aperia has got no tail; its flesh is like that of a rabbit, which it resembles in its method of living; it conceals itself in holes, but does not burrow like a rabbit, but rather retires into the cavities of the rocks and stones. It is very easily taken. Lesson states it to be the Guinea pig in its wild state.

THE TAPETI

Is found in Brazil, and other parts of America. It resembles the European rabbit in figure, and the hare in size and colour; its ears very long, and of the same shape; its hair is red on the forehead, and whitish on the throat; some have a circle of hair round the neck; they are all white on the throat, breast, and belly; they have black eyes, and whiskers like the rabbit, but have no tail. The Tapeti resembles the hare in its method of living, fecundity, and the quality of its flesh, which is excellent food. It lives in the fields or woods, like the hare, and does not burrow like the rabbit.

THE JUDA GOATS

Are considered by our author as only varieties of the common goat. One species has short, smooth, erect horns, curved a little forwards, and is about the size of a kid of a year old. The other is also of a dwarfish size, but of quite different horns. They are very thick, rounded on the upper surface, with two sharp edges below; and bent backwards, with a slight spiral twist downwards, outwards, and upwards.

THE KANGUROO.

There exist several species of the Kanguroo, all of which are natives of New Holland. The principal of these is the Great Kanguroo, which was first discovered in 1770, by some of the persons who accompanied Captain Cook. It often measures nine feet in length from the tip of the nose to the end of the tail, and when full grown, weighs two hundred pounds. The head and neck are very small, while the lower parts gradually dilate to a very great size; the fore legs are hardly nineteen inches long, while the hinder ones, which are perfectly bare and callous beneath, measure three feet seven inches. The head bears some resemblance to that of the deer, having a mild and placid visage; the ears are moderately large and erect, the eyes full, and the mouth rather small. The general colour is a pale brown, inclining to white underneath. From the great difference in length of the fore and hind legs, the pace of this animal consists in vast springs, or bounds, which are said at times to exceed twenty feet in length. It can with ease leap over an obstacle above nine feet high. In its state of rest, it sits erect on the whole length of the hind feet, supporting itself by the base of the tail; which is occasionally used as a weapon of defence, and is of such prodigious strength as to be able to break the leg of a man at a single blow. The female seldom produces more than one young one at a birth, which, when first brought forth, is not above an inch long, and is received into an abdominal pouch, that the female is furnished with, which conceals the teats, and serves as a receptacle to secure the young in time of danger.

THE SILVER-HAIRED KANGUROO

Is considerably smaller than the former, and distinguished by the delicacy of its limbs and the superior fineness of its hair.

THE RAT KANGUROO

Differs from the common species in being only the size of a rabbit. The colour is brown, with long coarse hair, ash-coloured beneath; the ears are more rounded, and there are only four toes on the fore feet. On each side of the upper lip are several long whiskers, which are wanting in the Great Kanguroo; the head is rather flattened sideways, and the general appearance of the animal is far less elegant and pleasing.

The habits of the Kanguroo have been recently described, with equal animation and fidelity, by Mr. Cunningham, in his amusing and valuable account of his Two Years' Residence in South Wales.

"Our largest animals (says he) are Kanguroos; all of which are fine eating, being clear of fat except about the tail, tasting much like venison, and making most delicious stews and steaks, the favourite dish being what is called a steamer, composed of steaks and chopped tail (with a few slices of salt pork) stewed with a very small quantity of water for a couple of hours in a close vessel. We have the forest Kanguroo, of a gray colour, with a longish fur, inhabiting the forests; the Wallaroo, of a blackish colour, with a coarse shaggy fur, inhabiting the hills; and the red Kanguroo, with smooth, short, close fur, of a reddish colour (resembling considerably in fineness and texture the fur of the sea otter), inhabiting the open forests; and all of these varieties attain the weight of two hundred pounds and upwards when full grown. The Wallabee and Paddymalla grow to about sixty pounds each, and inhabit the bushes and broken hilly country. The rock Kanguroo is very small, living among the rockiest portions of the mountains; while the Kanguroo rat, or, more properly, rabbit, is about the size of the smallest of the latter kind of animal, and lodges in hollow trees, hopping along, like the other Kanguroos, with great speed, and affording good sport in the chase. The Kanguroos make no use of their short fore legs except in grazing, when they rise upon them and their tail, bring their hind legs forward, and go nibbling upon all fours, pulling up occasionally some favourite plant with their fore paw, and sitting up bold and erect upon their hind houghs and tail, while they slowly bite and nibble it, shifting it from paw to paw, like a boy protracting his repast on a juicy apple. When chased, they hop upon their hind legs, bounding onwards at a most amazing rate, the tail wagging as they leap, and serving them for a balance. They will bound over gullies, and down declivities, the distance of thirty yards, and fly right over the tops of low brushwood; so that, in such places, dogs stand very little chance with them; but in a clear open country soon tire them out. The dogs seize them generally by the hip, and throw them over; then fasten upon their throats and finish them. But few dogs will attack a large Kanguroo singly, some of the two hundred weight size often hopping off with three or four assailants hanging about them; and I was informed of one that actually carried a man to some distance. When a dog gets up close to a large Kanguroo, it will often sit upon its tail and haunches, and fight the dog, turning adroitly round and round (so as always to face him), and pushing him off with the fore paws; or it will seize and hug him like a bear, ripping him up with the long sharp claw on its powerful hind leg. They are constantly indeed cutting, and often killing, dogs with this terrible weapon, which will tear out the bowels at a single kick; and a large Kanguroo is, on this account, very dangerous even for a man to approach, when set at bay. The Kanguroo hunters immediately hamstring them when thrown, to prevent injury to themselves or the dogs; while the black natives give them a heavy blow over the loins with their waddie, which completely paralyzes their hind legs, as all the large nerves supplying these parts pass out there. The Kanguroo has only one young at a time, which you may see attached by the mouth to the nipple inside the mother's pouch from the period it is the size of your thumb top, and as bare and unshapen as a new-born mouse, until it attains the size of a poodle-dog, with a fine glossy coat of hair, ready to leap out and hop along after the mother. The young are attached by the mouth to the nipple in somewhat the same way as the placenta of other animals is attached to the uterus, the mouth being contracted round the nipple, which swells out like a cherry inside it, nourishing the fœtus by means of absorption through this indirect channel, the mouth and nipple adhering so strongly that it requires considerable force to separate them. When the fœtus arrives at sufficient age to suck, it drops off the nipple, and may then be said to be *born*, yet still continuing inside of the pouch, and sucking milk now through the ducts of that same nipple from the external surface of which it formerly derived a very different species of nourishment. The manner in which the young reach this pouch from the ovary, and attach themselves to the nipple, is still, I believe, a mystery, as no communicative duct has yet been found; but the natives assert they are born in the usual way, and that the mother places them there. It is amazing to see the young Kanguroo pop its head out of the pouch when the mother is grazing, and nibble too at the tender herbage which she is passing over. When hard hunted, the mother will stop suddenly, thrust her fore paws into her pouch, drag out the young one and throw it away, that she may hop lighter along. They are always very hard pressed, however, before they thus sacrifice the life of their offspring to save their own; and it is pitiful to see the tender sympathetic looks they will sometimes cast back at the poor little helpless creatures they have been forced to desert. From this singular mode of gestation, you may handle the *fœtus in utero*, and pull it about by the tail like a kitten, from the first moment of its appearance there up to the very day of its birth, without causing either pain or annoyance to it or its mother. Such is the very singular manner in which nearly all our Australian quadrupeds are generated and brought forth. When the young Kanguroo has attained a considerable size, it will crawl out, feed about, and creep in again to warm itself, or in case any danger approaches. The Kanguroos feed early in the morning, when the dew is on the grass, which is the best time to hunt them. If there is no dog in your pack that will show the game, you must keep sight of the dogs at full gallop to secure it, or else take out a little short-legged terrier, that will run the foot, and that you can readily keep sight of till it reaches the others, otherwise you may lose all your sport, as few of our dogs give tongue either in the chase or at the death. If there is a river or pond near, the Kanguroos are sure to retreat thither when hard pressed, and in this way readily baffle the natives' dogs, by shoving under water and drowning such as may venture in beside them. From the great length of their hind legs and tail, they are enabled to stand on the firm bottom while the dogs are obliged to swim; and in this way a fight between a large Kanguroo and a pack of dogs affords a most amusing spectacle. The Kanguroo stands gravely upright, with his fore paws spread out before him, wheeling round and round to ward off his assailants; and whenever one arrives within his reach, he pounces his paws upon him, and sousing him suddenly under, holds him fast in this position, gazing all the while around with the most solemn simpleton sort of aspect, heedless of the kicking and sprawling of his victim, whom he quickly puts an end to, if some courageous colleague does not in good time advance to its aid, and force the Kanguroo to let his half-drowned antagonist bob above water again, who paddles forthwith towards shore, shaking his ears and looking most piteously, with no inclination to venture in a second time, notwithstanding all the halloos and cheerings with which you urge him."

The Kanguroo may be domesticated. "One of the largest tame Kanguroos I have seen in this country (says Mr. Cunningham) is domesticated, and a mischievous wag he is, creeping and snuffing cautiously towards a stranger, with such an innocently expressive countenance, that roguery could never be surmised to exist under it; when, having obtained, as he thinks, a sufficient introduction, he claps his fore paws on your shoulders (as if to caress you,) and raising himself suddenly upon his tail, administers such a well put push with his hind legs, that it is two to one but he drives you heels over head! This is all done in what he considers facetious play, with a view of giving you a hint to examine your pockets, and see what *bon bons* purpose of imposing on collectors. When the creature was first discovered, it received the allusive name of Ornithorynchus Paradoxicus; but it has since been denominated the Platypus Anatinus, or Duck-billed Platypus. It has a depressed body, somewhat resembling that of an otter in miniature, which is covered with a soft fur, dark brown above, and of a ferruginous white beneath. The head is flattish, and the snout so exactly resembles that of some broad-billed species of duck, that it might easily be mistaken for such. The tail is flat, furry, and of the same colour as the body. The length of the whole animal, from the tip of the beak to that of the tail, is thirteen inches; of the beak an inch and a half. The legs are very short, and terminate in a broad web, which on the fore feet extends to a considerable distance beyond the claws; but on the hind feet reaches no farther than the roots of the claws. On the upper part of the head, on each side, a little beyond the beak, are situated two oval white spots, in the lower part of each of which the eyes are embedded.

From the general form of this animal, and particularly its bill and webbed feet, it may naturally be concluded, that it resides in watery situations; that it has the habit of digging or burrowing in the banks of rivers or under ground; and that its food consists of aquatic plants and animals.

After so copious a history of quadrupeds as that which has just been submitted to our readers, a very few words appear necessary to complete the Natural History of that class of animals.

On one topic only we shall therefore enlarge. It has been frequently intimated, that a material difference exists between the animals of the Old and the New Continent. While America far exceeds us in the size of its reptiles, it is far inferior in its quadruped productions. In effect, so materially different are many of them found which inhabit the New Continent, from those of the Old, that, though we have generally noted the country of the animal we have described, yet we conceived that it might not be unsatisfactory to the reader, if we endeavoured to exhibit a synopsis of the quadrupeds which are peculiar to each Continent.

you have got for him, as he munches cakes and comfits with epicurean *gout;* and if the door is ajar, he will gravely take his station behind your chair at meal time, like a lackey, giving you an admonitory kick every now and then, if you fail to help him as well as yourself."

THE WOMBACH.

This animal is a native of New South Wales, and was discovered in the year 1798. It is about the size of a badger, a species of which it was supposed to be, from its dexterity in burrowing in the earth by means of its fore paws; but, in its general motions, it appeared to have much of the habits and manners of a bear. It has a large head, a broad forehead, a face tapering to the nose, which is a hard, gristly substance, well adapted for removing the earth when it burrows: each jaw has two cutting teeth, long and sharp like those of a kanguroo, with a space of an inch between them and the grinders, which are strong and well set. From the structure of its teeth, it does not appear to be a carnivorous animal: its eyes are small and black; its ears short and pointed. The paws are something like a beaver's, with which it runs so awkwardly that a man could easily overtake it. Its posteriors differ from most other animals, by falling down in a sloping direction, commencing at the hip joint, and descending to the knee joint of the hind legs: its tail is so short that it is scarcely perceivable. The general colour is of a cream-brown, intermixed with black hairs. The female, like most other animals of New South Wales, is distinguished by a pouch or false belly for its young. The flesh is considered by the natives as a great luxury.

THE DUCK-BILLED PLATYPUS.

New Holland, which, among other living curiosities, has supplied us with that rara avis the black swan, is also the country that produces this anomalous animal, one of the strangest sports of nature, as it combines the bill of a bird with the usual characteristics of a quadruped. So singular is this union, that it was at first supposed to be the trick of some person, for the purpose of imposing on collectors. When the creature was first discovered, it received the allusive name of Ornithorynchus Paradoxicus; but it has since been denominated the Platypus Anatinus, or Duck-billed Platypus. It has a depressed body, somewhat resembling that of an otter in miniature, which is covered with a soft fur, dark brown above, and of a ferruginous white beneath. The head is flattish, and the snout so exactly resembles that of some broad-billed species of duck, that it might easily be mistaken for such. The tail is flat, furry, and of the same colour as the body. The length of the whole animal, from the tip of the beak to that of the tail, is thirteen inches; of the beak an inch and a half. The legs are very short, and terminate in a broad web, which on the fore feet extends to a considerable distance beyond the claws; but on the hind feet reaches no farther than the roots of the claws. On the upper part of the head, on each side, a little beyond the beak, are situated two oval white spots, in the lower part of each of which the eyes are embedded.

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In pursuing this plan, we have made two columns; the one for Europe, Asia, Africa, and the other for America. When we have found an animal of the New Continent resembling nearly that of the Old, we have placed it opposite in the same line; and those which are common to both we have placed in the middle, between the two columns.

Europe, Asia, Africa.	*Common to all.*	*America.*
Elephant		
Rhinoceros	Tapir	
Hippopotamus		
Camel		Llama
Dromedary		Paco
Camelopard		
Lion		Puma
Tiger		Jaguar
Panther		Cougar
Leopard		Jaguarette
Ounce		Mountain Cat
Zebra		
Horse Ass		Though not originally found there, horses and asses are now plenty in America.
Ox Buffalo		These also are now numerous.
	Bison	
Sheep Goat		These also are now produced in America.
Hog		Now produced there.
		Peccary
Guinea Hog		Now produced there.
Dog		Now produced there.
		Alco
		Goschis
Hyæna		
Jackal		
Porcupine		Urson
		Couanda
Genet		
Civets		A species of them is said to have been found there originally.

Europe, Asia, Africa.	*Common to all.*	*America.*
Cat		Now produced there.
Antelope		
Guinea Stag		
Chamois		
Ibex		
Musk		
Rabbit		Now produced there.
		Tapeti
Ferret		
Rat		Now produced there.
		Aperea
Mouse		Brazilian Field Mouse
Fat Squirrel		
Garden Squirrel		
Ichneumon		
Badger		
Sable		Pekan
Ermine		Vison
		Stinkards
Jerboa		
Maki		
Several species of Monkeys		Sapajou and Sagoin
		Racoon
		Cabiai
		Tajacou
Pangolin and Phatagin		Ant-eaters
		Sloth
Rain-deer		Cariacou
		Couandou
		Agouti
		Coati
		Opossum
		Pacos
		Indian Hog
		Cavy
		Armadillo
		Kanguroo
	Rat	
	Rain-deer	
	Stag	
	Bear	
	Roebuck	
	Hare	
	Squirrel	
	Hedgehog	
	Otter	
	Marmot	
	Shrew Mouse	Mexican Shrew
	Mole	

Europe, Asia, Africa.	*Common to all.*	*America.*
	Beaver	
	Wolf	Mexican Wolf
	Fox	
	Weasel	Tayra
	Ermine	
	Pine Weasel	
	Polecat	
	Lynx	
	Seal	
	Walrus	
	Roebuck	Mazame
	Elk	
	Glutton	
Pouch	Dormouse	
Desman		Ondatra

Of the two hundred species of Quadrupeds which Buffon supposes to exist, he calculates, that about ninety are original inhabitants of the Old Continent, and about seventy of the New, and that forty may be accounted common to both. Since the period when he wrote, the number of species has been much increased.

THE END.

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